A STUDY OF THE ADDITIVITY OF VARIABLES INFLUENCING CONFORMITY

By

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INTRODUCTION

> As the individual acts in . . . contact with other group members, he is often placed under group pressure to conform--to judge, believe, act in agreement with the judgment, belief, and action of the group (Krech, Crutchfield, and Ballachey, 1962, p. 505).

Interest in conformity has become quite evident in recent years, both in popular literature and thinking, and in the experimental literature. That certain types of behavior, which we have labelled conformity, can be and are elicited both in a controlled laboratory setting and in a natural "real life" setting has frequently been demonstrated (Asch, 1961). While popular interest has dwelt heavily on the merits and dangers of conforming behavior, research interest has moved toward a delineation and understanding of those variables which enhance or suppress the appearance of conformity in a group setting.

The fact that the topic of conformity has such wide appeal is not surprising if we consider the necessity of some degree of conformity for the smooth functioning and maintenance of a social grouping. If any kind of harmony is to be maintained within a group,

the individuals involved must conform to at least a minimum set of normative demands. Concern arises when conforming behavior reaches suoh a level that it is seen as being an end in itself, and serves to suppress innovation and the development of creativity. With the high value placed on progress and improvement in our society, then, conformity beyond a certain level may be interpreted as working in opposition to the values we hold. Thus, we again come to the point that to hold the amount of conformity to an optimum level, we must understand the conditions under which it ocours, is enhanced, or suppressed.

Background and Purpose

Although the early experiments on suggestibility (e.g., Annis and Meier, 1934; Clark, 1916, Moore, 1921) were forerunners of the present day research on conformity, the work of Muzafer Sherif and Solomon Asch served more directly as the impetus to the experimental study of conformity.

Sherif (1936) showed that the reactions of individuals in a highly ambiguous situation were largely determined by social and organismio variables. The subjects (Ss) were seated in a totally darkened room and asked to fixate on a pinpoint of light appearing periodically at a distance in front of them. Although the light was stationary, it appeared to move after a few seconds

of observing it (the autokinetic phenomenon). Each S was asked to estimate the distance that the light moved. Sherif found that when making estimates without others present, S established a range within which his estimates of apparent movement fell, and that this range varied from S to S. When two or three Ss with substantially differing ranges were present, and were asked to report verbally their estimates to the experimenter (E), it was found that their estimates converged significantly. More direotly related to the study of conformity, however, was the finding that when one of the Ss was given a pre-determined range within whioh to respond, 80 per cent of the other S's estimates were within the range reported by the instructed S (Sherif and Sherif, 1956).

The stimulus materials used by Asch (1951, 1952, 1956) consisted of a set of large white cards which were viewed by a group of Ss simultaneously. Each oard contained one vertical line on the left, called the standard, and a group of three vertioal lines on the right. These three lines, oalled the comparison lines, were of different lengths, with one of the three lines being equal in length to the standard line. The comparison lines were numbered 1, 2, and 3, and the task involved judging whioh of the three oomparison lines

was equal to the standard line. All but one S (called the naive S) in each group were pre-instructed to respond to the stimulus cards in a particular way, although the naive S was led to believe that all Ss were operating under identical instructions. In order (suggested by E), each S reported his judgment verbally to E, with the naive S reporting last. On certain trials, each S reported the correct alternative, but on others, called critical trials, the pre-instructed Ss unanimously chose a specified incorrect alternative. When the naive S reported the same incorrect judgment as that given by the pre-instructed Ss, his response was classified as an instance of conformity (or yielding, in Asch's terminology). Using this procedure, Asch found that 33 per cent of his naive Ss conformed to the incorrect majority judgments.

It may be seen that Asch created a very different type of situation for the study of social influences upon an individual's judgment than did Sherif. Although both Sherif and Asch used perceptual materials as the stimulus to which S responded, those used by Asch provided one clear-cut, correct response alternative, and two obviously incorrect alternatives. In contrast, there was no objectively correct response for the stimulus employed by Sherif, even though S was led to believe that a correct response was possible. Other findings of the

series of experiments conducted by Asch will be reported below.

The general design of the present study is similar to the Asch procedure described above, and is also typical of the studies to be cited below. As noted by Asch (1961), the usual paradigm in conformity studies is for E to establish the judgment of S about some particular stimulus material, and then expose him to the unanimous and usually incorrect group judgment. The group judgment is always different from the judgment of S, and has usually been contrived by E, but S is not aware of the contrivance. It is then established if and how S has changed from his initial position.

Research has shown (Blake and Mouton, 1961a; Samelson, 1957) that the amount of conformity obtained in a given situation is related to pressures toward conformity arising from three sources: 1) the characteristics of the stimulus materials that are used; 2) the properties of the social context within which pressures are exerted; and 3) the personal properties of the individual upon whom pressures are exerted.

The most common design employed in conformity research has been the single variable experiment in which the effects on conformity of one variable at a time have been studied. This design, however, gives no information on how variables operating simultaneously might differentially affect the amount of conformity produced. Since

three classes of variables are present in any conformity situation, it is both necessary and desirable to obtain information about the interrelationships of variables from the three sources for an adequate and realistic picture of the effects of conformity pressures. Therefore, it was the purpose of the present study to examine the interrelationships among a variable from each of these three sources. Two limitations were made prior to the actual choice of variables in order to maximize the information obtained from the manipulation of three variables within an experimental framework. First, the variables chosen should be capable of manipulation in a controlled laboratory setting. Second, they should have been shown by previous, and preferably replicated, research to have a demonstrable relationship to conformity. On the basis of these conditions, the variables chosen for manipulation in this study were stimulus ambiguity, size of the majority exerting the pressure, and the social acquiescence characteristics of S.

In addition, it was proposed to obtain measures of S's reaction to the experimental situation through a postexperimental questionnaire. Specifically, interest was focused on the difficulty of choosing the correct alternative in the judging task; the confidence an individual feels in the correctness of his choice; the confidence he feels in the correctness of others; and the

accuracy with which he perceives his disagreement with the judgment of others.

Review of the Literature

Stimulus Materials

Differences in conformity may be attributed to variation in certain qualities or characteristics of the stimulus materials, such as ambiguity, difficulty, complexity, etc. Among the characteristics of the stimulus materials, ambiguity is of particular importance.

Crutchfield (1955) found the ambiguity of the stimulus to be a significant factor in determining the amount of conformity he obtained with 50 male Ss. With maximum ambiguity (e.g., a number series to be completed for which there was no logically correct solution), Crutchfield found that 79 per cent of his Ss conformed to the spurious group consensus, while in judging which of five comparison lines were equal in length to a standard line (similar to the Asch line stimuli, for which there is an obvious and factually correct solution and therefore minimum ambiguity), only 30 per cent of the Ss conformed to the spurious group consensus. As noted previously, Sherif and Sherif (1956), using the autokinetic effect (which may also be classified as a maximally ambiguous stimulus by the criterion of no factually correct solution), have reported that 80 per cent of a naive S's judgments

conformed to the range reported by a pre-instructed S. Luchins and Luchins (1955b) reported higher conformity for ambiguous than for non-ambiguous perceptual stimuli.

A characteristic related to stimulus ambiguity is the difficulty level of the materials being judged. Blake, Helson, and Mouton (1956) found that the more difficult the material to be judged, the more easily S is influenced.

Other characteristics often discussed with respect to the stimulus materials are perhaps more properly classified as characteristics of the judging person. Because of their relationship with the ambiguity of the stimulus, however, it seems appropriate to consider them here.

If an individual has more confidence in his own judgment than in the judgment of others, it is to be expected that he would not be highly influenced by the opposing judgment of others. Hochbaum (1954) found that the occurrence and amount of conformity, and the duration of resistance to pressures toward conformity, were affected by the individual's perception of his own ability to deal successfully with the issue, using case histories as stimulus materials. Other factors which influence the individual's confidence in himself, and the confidence he has in the judgment of others, affect the amount of conformity that he exhibits, such as certainty, and past success or failure. Fisher, Williams, and Lubin (1957) found that the

more certain a person is of his judgments, the more resistant he is to pressures toward conformity. Similar findings have been reported by Kelley and Lamb (1957), and Weiner (1956). Mausner and Block (1957) found that a prior history of success or failure was related to the amount of conformity. In a two-person situation, the past success of the S coupled with past failure of his partner resulted in significantly less conformity than when S had previously experienced failure and his partner had experienced success.

Social Context

The size of the majority has consistently been found to be an important factor in determining the amount of conformity. Evidence indicates that "conformity pressures increase with number of other persons present as a negatively accelerated function" (Blake and Mouton, 1961b, p. 234). Asch (1958), using unanimous majorities of sizes 1, 2, 3, 4, 8, and 16, found that the majority effect was virtually absent with only one person opposing the naive S. A majority of two produced 13 per cent conformity responses. Larger majorities did not produce effects greater than the majority of three. Luchins and Luchins (1955a) report that 80 per cent of their judging group showed conformity responses with a majority of three, whereas only 10 per cent showed conformity responses with a majority of one. Rosenberg (1961) replicated Asch's work

on group size and his results fully support those of Asch. Vaughan and Mangan (1963), using majorities of 1, 2, and 3, also found increasing conformity occurring with increasing size of the majority. Goldberg (1954) reported no differences in conformity with majorities of 1 and 3; however, the reports of majority consensus were given by E without the majority actually being present, thus confounding E with the size of the majority. Because of other peculiarities of the experiment as well, this study is not comparable to those reported above, and is not considered as a refutation of the consistency of findings on majority size. Kidd (1958) also failed to replicate Asch's findings on the effects of group size. As with the Goldberg study, procedural differences alone could well account for the failure of the group size variable to reach a significant level. It should also be noted that in both studies the findings were in the predicted direction.

Personal Properties of the Individual

Although many variables relating to the personal properties of the individual have successfully been related to conformity, the results either have not held up well in other studies, no additional research with the same variables has been reported, or the relationship with conformity has been found to be fairly weak. For example, Crutchfield (1955) found that conformity scores correlated

with staff ratings on "intellectual competence" -.63, and -.51 with the Terman Concept Mastery Test, a measure of "superior mental functioning"; these were the highest relationships obtained, of the personality variables he studied. However, in an earlier study (Crutchfield, 1951) using a slightly different definition of conformity (as measured by the Group Squares Test), he found a curvilinear relationship between conformity and intelligence. Di Vesta and Cox (1960), using the Crutchfield apparatus and attitudinal, informational, and perceptual stimuli found that conformity scores correlated -,24 with the Cooperative Reading Test-Vocabulary scores, -.20 with the ACE Psychological Examination-Language scores ($p < .01$ in both cases), and -.30 with quality point ratio of academic achievement ($p = .01$) for 120 Ss. Fisher, Williams, and Lubin (1957) report no relationship between intelligence and conformity but did not identify the measures they used. Berenda (1950) also failed to find a significant correlation between intelligence measures and conformity.

Crutchfield (1955) found a correlation of +.39 between conformity and authoritarian attitudes using the F Scale. This finding has been supported by others (e.g., Beloff, 1958; Hardy, 1957), but because the F Scale correlates with so many other variables as well, it is of limited value in assessing conformity behavior in particular.

Frye and Bass (1963) report a correlation of +.39 between conformity to group decisions in the laboratory and social acquiescence. Social acquiescence was defined by Bass as "the tendency to accept rather than reject any generalizations (proverbs) about human behavior"(1961, p. 44), and was measured by a scale constructed by Bass (1956).

Because of the current state of findings relating conformity to the personal properties of the individual, final decision as to the choice of a variable was more or less arbitrary. On a conceptual level, social acquiescence and conformity appear to be highly similar. Bass (1956) reported that the Social Acquiescence Scale correlates with the following, using college students as Ss: intelligence, as measured by the ACE test, -.12; grade point average - .12; sociability, as measured by the GZ Temperament Survey-P, + .25; empathy, as measured by the Kerr Empathy Test, -.14; empathy as measured by the Accuracy on "How Others Rate Me" test, -.34; and introversion, as measured by the GZ Temperament Survey-T, -.25. Although the above correlations are low, they do indicate a relationship between acquiescence and many of the factors that have been shown or are believed to be related to conformity. Therefore, based on the correlation between conformity and social acquiescence obtained in the Frye and Bass study, and the conceptual relationship between social acquiescence and conformity, social acquiescence was chosen as the third variable to be manipulated in this study.

Hypotheses

Festinger (1950) has provided a framework useful for relating the influence of the three variables on conformity. He states that individuals must have some basis for determining the validity of the beliefs they hold, and suggests that one basis for determining subjective validity is the continuum expressing the degree of physical reality. At one end of the continuum, dependence upon physical reality occurs when the validity of a belief may be empirically tested by checking it against physical facts. Under these conditions, dependence upon other people, or social reality, for the confidence with which one holds a belief is very low. At the other end of the continuum, dependence upon social reality occurs when there are no observable objective facts against which to check a belief.

In a clearly structured, nonambiguous stimulus situation, then, where there is an obviously correct alternative (as is the case with the Asch lines) the individual should tend to base his decision upon the observable facts, in preference to the judgments of other persons. Further, when the judgments given by other persons--i.e., social reality--are incorrect, the contrast between the correct alternative and the incorrect majority should be more obvious to S than when the stimulus situation is more ambiguous. Asch (1958), for instance, noted that his Ss showed more signs of disturbance when faced with an

incorrect majority opinion for the line stimuli than when the judging task possessed less "structural clarity."

When the correct choice is not so apparent, as in the case of the comparison of geometric figures differing in shape, and at the same time differing only slightly in size, the individual should tend to rely more heavily upon social reality, or the judgment of other persons in making a decision. The incorrect opinion expressed by other persons should also be less obvious in this situation, and therefore serve to enhance the effect of social reality as the basis for the person's judgment.

While the effect of ambiguity on conformity appears to be in the direction of increasing the individual's dependence on social reality, or consensual validity, as a basis for his judgment, the size of the majority may be thought of as decreasing his confidence in the validity of his judgment as opposed to theirs. In terms of numbers alone, his judgment carries at least equal weight when he is opposed by only one other; increasing the size of the opposition decreases the weight of his judgment in proportion to the total and therefore increases the probability that he will conform to their consensual judgment. With respect to present research evidence, however, the effect of size of the opposing majority appears to be asymptotic when three persons are in opposition.

As stated earlier, Bass has defined social acquiescence as "the tendency to accept rather than reject any generalizations (proverbs) about human behavior" (1961, p. 44). Based on the pattern of relationships he obtained between the Social Acquiescence Scale and other variables, he suggests that the following inference might be made:

> The person high in social acquiescence is an "outward oriented," insensitive, non-intellectual, socially uncritical individual; in short, a Babbitt--an unquestioning conformer to social demands placed on him (Bass, 1956, p. 297.

These qualities suggest that the person high in social acquiescence would tend to depend on social reality as the basis for his judgments, whatever the other conditions of the situation might be, thereby increasing the amount of conformity he would show to the opposing majority.

Each of the variables studied, then, appears to affect the weight given to social reality as a basis for making a judgment. One effect of increasing the weight of social reality as the basis for judgment is to increase the probability that the individual will conform to the judgment of an opposing group. The following hypotheses, therefore, were tested in the present study:

1a) Social acquiescence, b) size of the majority, and c) stimulus ambiguity affect conformity in a predictable direction. That is, the high level of each of the three variables produces greater conformity than the low level

of the same variable, with the other two variables held constant.

Social acquiescence, size of the majority, and stimulus ambiguity have an interactive effect on conformity. 2a) The combination of high levels of all three variables produces more conformity than the combination of low levels of all three variables.

It is suggested that the three variables have quantitatively different effects on conformity. A review of the research literature (Asch, 1956, 1962; Crutchfield, 1955; Frye and Bass, 1963; Luchins and Luchins, 1955a, 1955b; Reitan, 1962) indicated that the rank ordering from greatest to least effect on conformity was ambiguity, majority size, and acquiescence. It is further suggested that the combined effects of the three variables are different at the high and low levels--i.e., that the effects are multiplicative rather than additive. Previous data collected by the writer (unpublished) on the combined effects of ambiguity and majority size indicated that the high levels of the combined variables produced a proportionately greater amount of conformity than the combination of the low levels.

In view of previous research findings, the following relationship between influence pressures (considering ambiguity, majority size, acquiescence, etc., as influence pressures) and conformity was suggested: First, there is a threshold value below which influence pressures (either singly or combined) produce an extremely small (if any)

effect on S's behavior. Second, when the strength of the variables is increased sufficiently to put them above S's threshold, then their combined effects increase the amount of conformity in a multiplicative fashion. Third, there is an upper limit on the effects of influence pressures. Thus, if S has an upper limit of 90 per cent conformity, then even if the combination of strong variables were such as to theoretically induce 100 per cent conformity in S, the amount of conformity observed would not be greater than 90 per cent.

Support for the threshold interpretation of influence pressures is contained in Asch's (1962) comparison of the behavior of one naive S when opposed by an instructed and incorrect majority, with the behavior of a naive majority whose ranks contained one instructed and incorrect S. When one incorrect S is placed in a naive majority, Asch notes that

> The members of the naive majority react to the lone dissenter with amusement and disdain. . . . Of significance is the fact that the members lack awareness that they draw their strength from the majority, and that their reactions would change radically if they faced the dissenter individually. In fact, the attitude of derision in the majority turns into seriousness and increased respect as soon as the minority is increased to three (1962, p. 198).

From the above discussion, then, the following hypotheses were made concerning the ordering of the

various combinations of the levels of the three variables:

2b) The low levels of the three variables combined are close to the threshold value and produce little conformity. Social acquiescence is a relatively weak variable and therefore has little effect at the low levels of ambiguity and majority size.

2c) Above the threshold level, the combined effects of the three variables increase the amount of conformity multiplicatively. That is, the combination of stronger influence pressures produces proportionately more conformity than the combination of weaker influence pressures.

2d) At the other end of the continuum, high amounts of conformity occur when the high levels of both ambiguity and majority size are present. Here also, because it is a weak variable, the level of acquiescence makes little difference.

2e) In terms of relative strengths, the combination of high ambiguity with low majority produces more conformity than low ambiguity with high majority. Within this range, the effect of acquiescence determines the particular ordering. The following order is suggested (from the highest conformity produced to the lowest:

High acquiescence, high majority, high ambiguity
Low acquiescence, high majority, high ambiguity
High acquiescence, low majority, high ambiguity
Low acquiescence, low majority, high ambiguity

High acquiescence, high majority, low ambiguity

Low acquiescence, high majority, low ambiguity

High acquiescence, low majority, low ambiguity

Low acquiescence, low majority, low ambiguity

In accordance with Hypothesis 2d, high acquiescence, high majority, high ambiguity; and low acquiescence, high majority, high ambiguity should not differ significantly. In accordance with Hypothesis 2b, high acquiescence, low majority, low ambiguity; and low acquiescence, low majority, low ambiguity should not differ significantly.

In addition to the hypotheses above dealing with the major variables tested in this study, several supplementary variables were examined. As reviewed above, research evidence has indicated that the difficulty of the judging task and the confidence S has in his own ability of the others in the situation is related to conformity behavior. The following supplemental hypotheses were tested:

3. The high and low levels of social acquiescence, size of the majority, and stimulus ambiguity have different effects on the ratings of a) difficulty of the judging task, b) the confidence one has in his own judgment, and c) the confidence one has in the judgment of others, at the high and low levels of each variable.

4. There is a significant positive relationship between conformity scores and a) difficulty, and b) confidence in others ratings, and a negative relationship

between conformity scores and c) confidence in self ratings.

One further dependent variable, perceived disagreement, was examined in this study. Perceived disagreement is defined as S's estimate of the number of times he thought he had disagreed with the others. Perceived disagreement appears to have received little attention in the literature on conformity. Asch (1956) asked 49 Ss how many times they disagreed with the others, and found that there was a general underestimation of the amount of disagreement. The mean discrepancy between the actual and estimated disagreement was highly significant ($p < .001$). However, Asch reports no further analysis of disagreement estimations. Gerard (1964) reported significantly ($p < .02$) more perceived disagreement in face-to-face groups in the Asch-type situation than for groups judging anonymously in a Crutchfield-type apparatus.

Assuming that perceived disagreement does differ from actual disagreement, the following hypothesis was tested:

5a) Social acquiescence, b) size of the majority, and c) stimulus ambiguity affect one's estimate of disagreement with others; i.e., one's perceived disagreement. It is suggested that overestimation of disagreement occurs when the contrast between the majority judgment and the correct judgment is more obvious (low ambiguity), relatively strong (high majority), or when dependence upon social reality is low (low acquiescence). When the contrast is less obvious

(high ambiguity), relatively weak (low majority), or when dependence on social reality is high (high acquiescence), underestimation occurs.

METHOD

Experimental Design

A 2 X 2 X 2 X 2 factorial design was employed to test the effects of influence (I), social acquiescence (A), majority size (M), and stimulus ambiguity (Am).

Influence was the term chosen to differentiate between the experimental and control treatment combinations. Operationally, the presence of influence (I+) refers to the fact that the purported judgments of the other Ss were relayed to S by means of a light panel, before he made his judgment. The absence of influence (I-) refers to the fact that the judgments of the others were not relayed to S at any time. The control treatment combinations (I-) were comparable to the experimental treatment combinations (I+) in all ways except that S had no information about the judgments being made by the other Ss.

The inclusion of a control condition was necessary to insure that 1) neither the acquiescence characteristics of S, nor 2) the knowledge that either one or three others were also making individual judgments affected the accuracy with which Ss judged the stimulus materials. The importance of this point has been

stressed by League and Jackson (1964), who found significant differences in the accuracy of judgment of two groups of Ss (selected to differ in self-esteem) before influence was exerted. Differences in the accuracy of judgment were expected between the levels of ambiguity of the stimulus materials. Thus, inclusion of a control condition was also necessary to provide a base line for determining if responses in the experimental treatment combinations were significantly different from those made in the matching control treatment combinations.

Social acquiescence was determined by Ss' scores on the Social Acquiescence Scale developed by Bass (1956). High acquiescence (A+) was defined as any score falling more than one-half standard deviation above the mean, and low acquiescence (A-) was defined as any score falling more than one-half standard deviation below the mean. The mean and standard deviation were determined on the basis of scores obtained from a total sample of 345 women, from which the experimental Ss were later drawn.

The majority size opposing S was either three other Ss (M+) or one other S (M-). It should be pointed out that majority size was actually a misnomer in the control treatment combinations (I-), since the majority did not attempt to influence S's judgment; a more accurate term here would be group size. However, majority size is the

more precise and accurate term in the experimental treatment combinations (I+), and in the interpretation of results, and was used for this reason.

Stimulus ambiguity was represented by the judgment of areas of geometric figures (Am+), and the judgment of the length of lines (Am-), described more fully below.

Subjects

Because significant sex differences have consistently been found in conformity studies (Applezweig and Moeller, 1958; Beloff, 1958; Crutchfield, 1955; Coleman, Blake, and Mouton, 1958; Luchins and Luchins, 1955a; Tuddenham, MacBride, and Zahn, 1958), only women were used as Ss.

Volunteers were solicited from the undergraduate student population at the University of Florida, with Ss primarily coming from introductory psychology courses, introductory sociology courses, courses in education, and courses in nursing. The Social Acquiescence Scale was administered to a total of 345 women, in groups ranging in size from 3 to 75 Ss. The acquiescence score was the total number of items with which S indicated agreement. Although the possible range of scores was 0 to 56, the actual range in this study was 0 to 47. The mean score for the total population tested ($N = 345$) was 20.623, and the standard deviation was 8.394. Based on the

obtained mean and standard deviation, Ss from this population with scores of 16 or below were randomly chosen to serve in the low acquiescence conditions; Ss with scores of 25 and above were randomly chosen to serve in the high acquiescence conditions. The mean acquiescence score for the low acquiescence Ss was 10.966 (N = 88), and 29.943 for the high acquiescence Ss (N = 88).

Within acquiescence levels, Ss were assigned at random to the treatment combinations of the experiment. Eleven Ss were observed under each of the sixteen treatment combinations, making a total sample of 176 Ss on whom data are reported.

Those Ss who gave any indication of having prior knowledge of this or similar experiments were eliminated from the sample.

Apparatus

The apparatus used was similar to that described by Crutchfield (1955). It consisted of five booths arranged in a semi-circle. The experimenter occupied the center booth, in which a Beseler opaque projector, and a master panel of lights and switches were located. Subjects were seated in the four side booths, facing a projection screen which was located approximately 10 feet from the semi-circle formed by the booths. Subject booths were curtained at the rear to provide additional isolation during

testing. A rear curtain for E's booth insured that its contents were hidden from S's view at all times.

Each subject booth contained a panel of twelve lights, arranged in four rows of three lights each, and three mercury switches located below the fourth row of lights. Each mercury switch activated one light in the fourth (or bottom) row of lights in the particular subject booth, and an analogous light on the master response panel in E's booth. Although each S was led to believe that the first three rows of lights would indicate the choices made by the other Ss in the I+ treatment combinations, the lights were actually controlled by master switches in E's booth, which permitted identical lights to be turned on in each booth simultaneously.[1] Responses of S were recorded from the lights appearing on the response panel in E's booth.

Stimulus Materials

Stimulus ambiguity was operationally defined as the degree to which the correct alternative is directly observable, or obvious to S in the stimulus situation. Low ambiguity, therefore, occurred when the correct solution was directly observable in the stimulus situation, and was represented by the Asch line task. High ambiguity occurred when the correct solution was not

[1] The switches were not used by E in the I- treatment combinations.

obvious to S without the use of additional measuring devices, and was represented by the comparison of the areas of geometric figures. Reitan (1962) found that six of the eight errors in judgment made by a control group judging both lines and areas were made on area judgments, supporting the definition of ambiguity used in the present study.

Asch (1958) used nine different stimuli, and Ss were instructed to identify which of three lines of varied lengths was equal to the length of a standard line. Conformity pressure (the majority unanimously chose an incorrect alternative) was exerted on six of the nine stimuli, and the series of stimulus cards was presented twice in the same order. For the present study, three additional stimuli, comparable to those used by Asch, were included. Conformity pressure was exerted on two of the three stimuli. Thus, there was a total of eight critical stimuli (those for which conformity pressure was exerted), and four non-critical stimuli (those for which the majority chose the correct alternative). Dimensions of the Asch stimuli were reduced proportionately and reproduced on white 4" X 6" cards for use with the Beseler opaque projector. The projected lines were 2.40 times as long as the lengths reported by Asch, and 6.33 times as long as the lengths on the stimulus cards. Table 10 in Appendix A gives the lengths

of the lines, the order of presentation, and the majority response for each stimulus card. A sample line stimulus card is shown in Figure 13 in Appendix A.

Each of the high ambiguity stimuli contained three different geometric figures (a combination of rectangles, circles, and triangles), and Ss were instructed to choose the figure with the largest area. The difference between the figure with the largest and with the smallest area on each critical card was one square inch or less. Table 11 in Appendix A gives the area of the figures, the order of presentation, and the majority responses for each stimulus card. A sample area stimulus card is shown in Figure 12 in Appendix A.

Conditions of judgment for the area stimuli were kept as close to those for the line stimuli as possible; the figures were reproduced on white 4" X 6" cards, the number of stimuli, division into critical and noncritical stimuli (eight critical, four noncritical stimuli), and order of presentation of the critical and noncritical stimuli was the same for both the line and area stimuli. For both the line and area stimuli, each series of stimulus cards was presented twice in the same order.

Because of the ambiguous character of the area stimuli, pretesting was necessary to ascertain which alternative to designate as the majority response on conformity trials. This was done by asking a group of 36 Ss, drawn from the same population as the experimental Ss, to indicate the

correct alternative for each of the twelve area stimuli. Conditions of judgment were identical with those used for experimental Ss except that no conformity pressures were exerted. Selection of the alternative to be used as the majority response was in all cases an alternative chosen less than 25 per cent of the time by this judging group.

Procedure

Because groups were formed on the basis of the acquiescence scores, two testing sessions were necessary. The first session involved administration of the Social Acquiescence Scale. The second session was the principal experimental period, consisting of the measurement of conformity behavior, and administration of the postexperimental questionnaire.

First Session

Administration of the Social Acquiescence Scale took place in some cases during a scheduled class period; in others, Ss appeared for testing as a result of posted notices announcing testing sessions.

All Ss were informed that the experiment involved two testing sessions, and that for those chosen to participate in the second session, appointment times would be arranged according to their preference if possible. No information was given about the second session, except

to assure Ss that no aversive elements were involved. Subjects were then asked to record their name, telephone number, and times available for the second session on an appointment sheet attached to the test booklet. They were told that their names were necessary for making appointments, but that all other information would be recorded according to a subject number assigned to them, and that no one except E would see their names attached to any of the data. Information regarding age and college classification was also collected from each S. After all questions had been answered, Ss were instructed to open the test booklet and proceed with the test according to the directions given in the booklet. The Social Acquiescence Scale, as administered to Ss, is reproduced in Table 12 in Appendix B . Upon completion of the test, Ss were dismissed.

Second Session

When Ss reported at the scheduled time, the following instructions were read to them before entering the experimental room:

> I am going to take you into another room to participate in a perception experiment. You will be placed in individual booths and given a number. I will show you several slides projected on a screen, and you will be asked to respond after seeing each slide. You will make your response by flipping a switch which turns on a light. More of this will be explained to you after you are seated in the booths. At the moment there are two important points to remember:

1. Please do not respond until your number is called.

2. There is to be no discussion or talking once you are seated in the booths. If you have questions, I will come to your booth and discuss them with you individually.

After entering the experimental room containing the apparatus, Ss were asked to select a booth and be seated. For the low ambiguity conditions, the following instructions were then read:

> I am going to project a number of slides onto the screen you see in front of you. Your task involves the judgment of the length of lines. On the left of the screen will be one line and on the right of the screen will be three lines of different lengths. They will be lettered A, B, and C. One of the three lines will be equal in length to the standard line on the left and you will decide for each slide which is the equal line.
>
> To indicate your judgment, you will use the appropriate switch on the panel in your booth. You will notice that the panel has 12 lights and three switches. The rows of lights are numbered 1, 2, 3, and 4. The columns of lights are labelled A, B, and C. Thus, if you are Person 2 and decide that line "C" on the right is equal in length to the standard line on the left, you will turn the "C" switch to the "On" position and the "2C" light will be illuminated on your panel, on the panel(s) of the other person(s), and on my panel.[2] The wiring is such that there is no logical order of persons according to booth position.
>
> Each group of lines will be presented on the screen for five seconds. I will remove the card and then ask you for your judgment by your number. Be as accurate as possible in determining the length of the line on the left. Please do not indicate your judgment until I request it by calling your particular number, and then leave the switch turned on until you are told to turn it off.
>
> Please do not talk during the experiment. I will come to each booth now to answer any questions you might have and to give you your numbers. Once I start showing you the slides I cannot answer any further questions.

---

[2]The phrase, "on the panel(s) of the other person(s)," was omitted in the I-treatment combinations. In the I+ treatment combinations, "panel" and "person" in the phrase were plural for M+ treatment combinations, and singular for M- treatment combinations.

For the high ambiguity conditions, the instructions were as follows:

> I am going to project a number of slides onto the screen you see in front of you. Your task involves the judgment of which of the three geometric figures represents the largest area. The figures will be lettered A, B, and C.
>
> To indicate your judgment, you will use the appropriate switch on the panel in your booth. You will notice that the panel has 12 lights and three switches. The rows of lights are numbered 1, 2, 3, and 4. These numbers represent the person numbered 1, 2, 3, and 4. The columns of lights are labelled A, B, and C. Thus, if you are Person 2 and you decide that, of the three figures presented, figure "C" represents the largest area, you will turn the "C" switch to the "On" position and the "2C" light will be illuminated on your panel, on the panel(s) of the other person(s), and on my panel.[3] The wiring is such that there is no logical order of persons according to booth position.
>
> Each group of figures will be presented on the screen for five seconds. I will remove the card and then ask you for your judgment by your number. Be as accurate as possible in determining which of the three figures represents the largest area. Please do not indicate your judgment until I request it, and then leave the switch turned on until you are told to turn it off.
>
> Please do not talk during the experiment. I will come to each booth now to answer any questions you might have and to give you your number. Once I start showing you the slides I cannot answer any further questions.

Following Asch's (1958) procedure, the particular set of stimuli (either high or low ambiguity) was presented twice in a predetermined sequence and conformity pressures were exerted on 16 of the 24 trials.

Upon completion of the stimulus series, the following instructions were read to all groups:

---

[3]The phrase, "on the panel(s) of the other person(s)," was omitted in the I-treatment combinations. In the I+ treatment combinations, "panel" and "person" in the phrase were plural for M+ treatment combinations, and singular for M-treatment combinations.

> This is the end of the judging task. I am now going to bring to each booth a questionnaire for you to complete. If you have any questions about any of the items, call me and I will come to your booth to answer them. After you have answered all items, leave the questionnaire on the chair in your booth, and then come out here.

The questionnaire was designed to obtain information about the supplemental hypotheses of the study, the effect of conformity pressures, and to weed out those Ss who were not naive about the experimental conditions. The postexperimental questionnaire is reproduced in Table 13 in Appendix B.[4] All Ss were then de-briefed, and asked not to divulge information concerning the experiment until all Ss had participated in the experiment.

[4] Questions 5, 6, 7, 8, and 9 of the questionnaire were adapted from those used by Asch (1956).

RESULTS

Scoring Procedures

The conformity score in the experimental (I+) treatment combinations was the total number of critical trials on which S agreed with the unanimous and incorrect majority response. In the control (I-) treatment combinations, no majority pressures were exerted, and there was no conformity score as such. The analogous score, referred to as a conformity score for continuity and consistency in discussion, was the total number of critical trials on which S chose the response which had been designated as the majority response in the I+ treatment combinations.

Conformity scores had a possible range of 0 to 16, with higher scores indicating greater conformity. Examination of the raw scores indicated a high degree of positive skewness. For this type of distribution, Bartlett (1936) suggests the $\sqrt{X + .5}$ transformation to stabilize the variance. This transformation was made on the raw conformity scores, and all statistical analyses were carried out using the transformed scores. The possible range of transformed scores was .707 to 4.062.

Scores for the items on the postexperimental questionnaire were as follows:

Question 1. Qualitative data only were obtained from this question. Responses indicating that S had guessed the purpose of the experiment, or had prior knowledge of the experiment, were used as one basis for the elimination of S from the experiment.

Questions 2, 3, and 4. Scoring procedures for the ratings of difficulty, confidence in self, and confidence in others were identical. Each score was the number of centimeters on the scale measured from the point checked by S. The range was 0 to 12, with a higher score indicating greater difficulty, greater confidence in self, or greater confidence in others.

Question 5. The perceived disagreement score was the proportion of the estimated number of times S indicated that he had disagreed with the others, to the actual number of times that he disagreed on all trials (both critical and noncritical). A score smaller than one indicated underestimation of disagreement, a score of one indicated correct estimation of disagreement, and a score greater than one indicated overestimation of disagreement. In six of the eight treatment combinations, one S failed to estimate the number of times he disagreed. One S was therefore randomly eliminated from the other two treatment combinations for the

statistical analysis of disagreement estimations, to maintain equal numbers to Ss in each treatment combination.

Questions 6, 7, 8, and 9. Responses were scored as one for a "Yes" response, and zero for a "No" response.

Question 10. Responses of "Yes" to this question, in connection with the reasons given, and after comparison with responses to Question 1, served to eliminate S from the experiment.

All raw score data are reproduced in Appendix D.

Analysis of Conformity Scores

The 2 X 2 X 2 X 2 analysis of variance carried out on the conformity scores is summarized in Table 1. Means and standard deviations of the conformity scores for each treatment combination are reproduced in Appendix D. The influence variable (experimental vs. control treatment combinations) was significant beyond the .001 level of confidence, supporting the assumption that influence pressures have a significant effect on judgment. Examination of the mean conformity scores in Table 2 reveals that accuracy of judgment of the stimuli was not affected by either acquiescence characteristics or majority size in the I- treatment combinations. As was expected, differences in the

TABLE 1

SUMMARY OF ANALYSIS OF VARIANCE FOR CONFORMITY SCORES

Source	df	MS	F
Influence (I)	1	12.979	48.222***
Acquiescence (A)	1	.780	2.898*
Majority size (M)	1	5.044	18.742***
Ambiguity (Am)	1	30.638	113.833***
I X A	1	.293	1.090
I X M	1	4.831	17.948***
I X Am	1	1.710	6.353**
A X M	1	.029	---
A X Am	1	.019	---
M X Am	1	.787	2.925*
I X A X M	1	.256	---
I X A X Am	1	.009	---
I X M X Am	1	.896	3.330*
A X M X Am	1	.607	2.255
I X A X M X Am	1	.112	---
Error: Within treatments	160	.269	
Total	175		

* $p < .10$
** $p < .025$
*** $p < .001$

TABLE 2

MEAN CONFORMITY SCORES FOR TWO LEVELS OF INFLUENCE (I), ACQUIESCENCE (A), MAJORITY SIZE (M), AND AMBIGUITY (Am)

Each mean is based on 44 Ss

	I+	I-
A+	1.732	1.107
A-	1.516	1.055
M+	1.959	1.084
M-	1.289	1.077
Am+	2.140	1.400
Am-	1.108	.762

accuracy of judgment between the Am+ and Am- treatment combinations were present in the I- treatment combinations. For the line stimuli (Am-), the incorrect majority response was chosen on 0.7 per cent of the total number of critical trials by the 44 Ss. This is identi- with the percentage of errors reported by Asch (1956) with a control group of 37 Ss. For the area stimuli (Am+), the incorrect majority response was chosen on 10.6 per cent of the total number of critical trials. Since selection of the alternative to be used as the majority response was an alternative, on each stimulus card, chosen less than 25 per cent of the time by a

prior group of judges, the percentage of errors for the control group falls well within the expected range.

The effects on conformity of both majority size and ambiguity were highly significant ($p < .001$), providing strong support for Hypotheses 1b and 1c. The acquiescence variable was significant at the 10 per cent level of confidence, thus failing to support Hypothesis 1a. The findings related to acquiescence, therefore, can only be regarded as suggestive. For all three variables, the high level of each variable produced greater conformity than the low level of the same variable, as shown in Table 2, and as was predicted by Hypothesis 1.

Hypothesis 2 relates to the interactive effect of acquiescence, majority size, and ambiguity on conformity. Hypothesis 2a states that the combination of the high levels of the three variables produces more conformity than the combination of low levels of the three variables. Examination of the means of the two treatment combinations supports this hypothesis. With influence pressures present, the mean for those *Ss* receiving high levels of the three variables was 2.691; for those *Ss* receiving low levels of the three variables, the mean was .942 ($t = 6.575$, $p < .001$).

The I X M interaction was highly significant ($p < .001$). As suggested above, majority size is an inaccurate term when no influence pressures are present (I-), since S's only exposure to "size" was knowing that either one or three other Ss were making individual judgments at the same time he was. When influence pressures were present (I+), he not only knew one or three others were present, but also saw what he thought were their responses flashing on the light panel in his booth. Figure 1 reveals that there was no difference between the majority levels under control treatment combinations, whereas the difference between the majority levels is very evident under experimental treatment combinations.

The I X Am interaction was also significant ($p < .025$), and is presented graphically in Figure 2. As may be seen, the levels of ambiguity produced different amounts of conformity under I+ and I- treatment combinations. Here also, however, the influence variable had differential effects on the levels of ambiguity, with the presence of influence increasing the number of conformity responses proportionately more at the high ambiguity level than at the low ambiguity level. The M X Am and I X M X Am interactions were significant at the 10 per cent level of confidence. Because of the highly significant I X M interaction, and the lack of

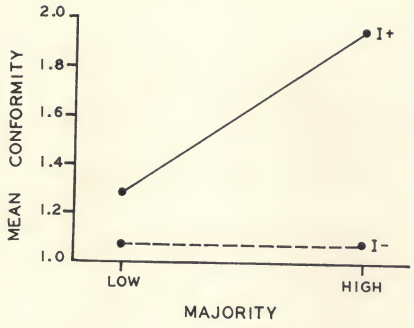

Figure 1.--Mean conformity for low and high majority size with influence pressures present (I+) and absent (I-).

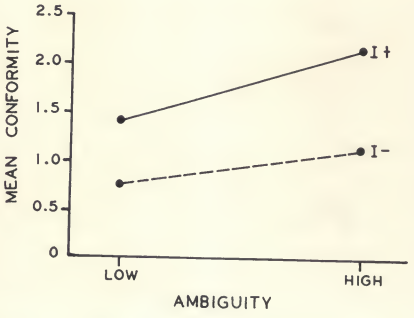

Figure 2.--Mean conformity for low and high ambiguity with influence pressures present (I+) and absent (I-).

meaning of the majority variable in the I- treatment combinations, the I+ data were analyzed separately, using a 2 X 2 X 2 analysis of variance. A summary of the analysis is shown in Table 3. Again, both majority size and ambiguity were highly significant ($p < .001$). Based only on the I+ groups, the M X Am interaction was significant at the 5 per cent level of confidence. Figure 3 indicates that the high level of ambiguity produced a proportionately greater difference in conformity between the two levels of majority size than the low level of ambiguity, and that majority size had the same proportional effect on the conformity scores for the levels of ambiguity. Hypothesis 2c, which states that the combination of the high levels of the variables produces proportionately more conformity than the combination of low levels of the variables is considered to be confirmed for majority size and ambiguity. Because the acquiescence variable failed to reach an acceptable level of significance, no conclusive statement can be made with regard to its effects on conformity. It is suggestive, however, to note the effects of acquiescence in combination with majority size and ambiguity. As presented graphically in Figure 4, the level of acquiescence had little or no effect when the other variables were both high or both low. When either one of the variables was high

TABLE 3

SUMMARY OF ANALYSIS OF VARIANCE FOR CONFORMITY SCORES, BASED ON EXPERIMENTAL CONDITIONS ONLY

Source	df	MS	F
Acquiescence (A)	1	1.015	2.614
Majority size (M)	1	9.874	25.428**
Ambiguity (Am)	1	23.411	60.292**
A X M	1	.229	---
A X Am	1	.001	---
M X Am	1	1.682	4.331*
A X M X Am	1	.621	1.598
Error: Within treatments	80	.388	
Total	87		

*$p < .05$
**$p < .001$

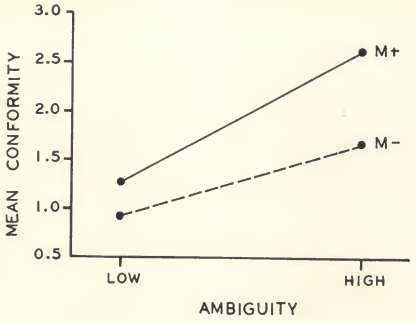

Figure 3.--Mean conformity for low and high ambiguity at high (M+) and low (M-) levels of majority size.

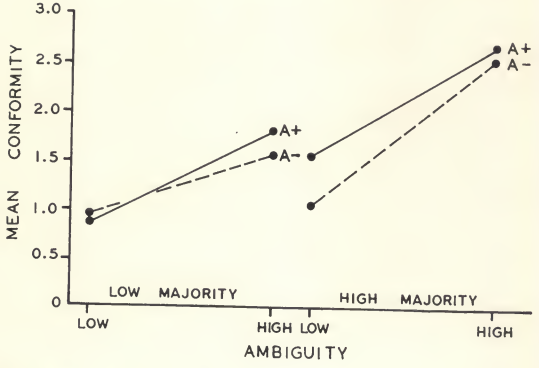

Figure 4.--Mean conformity for low and high ambiguity at high (A+) and low (A-) levels of acquiescence, for low majority size and high majority size.

and the other low, then differences in the levels of acquiescence were evident.

Table 4 gives the rank ordering of the means for the I+ treatment combinations, and indicates the significant differences among the means, as determined by Duncan's New Multiple Range Test (Edwards, 1963), with $\alpha = .01$. Although not shown in the table, all control means were included in the analysis. Differences were found between the levels of ambiguity in the control conditions, as noted previously. All experimental means were significantly different from their matched control mean, except for means of the combinations containing low levels of ambiguity and majority size in combination with either level of acquiescence (Rows 7 and 8 in the table). The means for these two treatment combinations were not significantly different from any of the four means containing the low level of ambiguity.

As predicted by Hypothesis 2b, when majority size and ambiguity were both low (Rows 7 and 8), the high and low levels of acquiesoence did not produce a significant difference in the conformity means. The high level of majority in combination with low levels of both acquiescence and ambiguity (Row 6) was not significantly different from the two lowest treatment combinations (Rows 7 and 8), but it was significantly different from its matched control group. As predicted

TABLE 4

MEANS OF THE CONFORMITY SCORES FOR THE PREDICTED RANK-ORDER OF THE EXPERIMENTAL TREATMENT COMBINATIONS

Each mean is based on 11 Ss

Treatment Combinations	Mean	
A+M+Am+	2.691	a
A-M+Am+	2.535	a
A+M-Am+	1.810	
A-M-Am+	1.523	
A+M+Am-	1.544	
A-M+Am-	1.066	
A+M-Am-	.881	
A-M-Am-	.942	

[a]Brackets indicate that any two means within the same bracket are not significantly different from each other. Any two means not included in the same bracket are significantly different ($\alpha = .01$), as tested by Duncan's New Multiple Range Test.

by Hypothesis 2d, the levels of acquiescence also failed to produce a significant difference when both of the other variables were high (Rows 1 and 2).

Hypothesis 2e stated that the combinations of high ambiguity and low majority produces more conformity than the combination of low ambiguity and high majority; and that within this range, the levels of acquiescence determine the particular ordering. Reference to Table 4 indicates that this hypothesis was generally supported. High ambiguity and low majority, when combined with high acquiescence (Row 3) produced a significantly greater amount of conformity than the same combination of ambiguity and majority size combined with low acquiescence (Row 5), and significantly more conformity than either of the two combinations involving low ambiguity and high majority (Rows 4 and 6). For the two conditions involving high majority and low ambiguity, the combination including high acquiescence (Row 4) had significantly higher conformity than did the combination including low acquiescence (Row 6). Examination of Rows 4 and 5 indicates that there was a reversal in the ordering of the means, based on the greater conformity predicted for the M-Am+ combination. However, the two means involved were not significantly different from each other, and in view of the other significant orderings, Hypothesis 2e is considered to be confirmed.

Analysis of Postexperimental Questionnaire Data

Question 1. "Please describe in your own words your experience during this experiment."

As noted under Scoring Procedures, the qualitative data obtained were for the purpose of judging S's prior knowledge of the experiment, and need no further analysis here.

Question 2. "By putting a check mark on the line below, please indicate how easy or difficult you feel it is to pick the correct choice for this material."

A summary of the 2 X 2 X 2 X 2 analysis of variance carried out on the difficulty ratings is shown in Table 5. Means and standard deviations of the difficulty ratings for each treatment combination are reproduced in Appendix D . Of the four main effects, only ambiguity was significant ($p < .001$). The mean difficulty rating for the low ambiguity stimuli was 1.761, and 7.949 for the high ambiguity stimuli. Hypothesis 3a is therefore confirmed only for the ambiguity variable.

Acquiescence interacted with both influence ($p < .025$) and majority size ($p < .05$). Figure 5 presents the I X A interaction graphically. Under influence pressures, high acquiescent Ss rated the stimulus materials as being more difficult to judge than did the low acquiescent Ss. When no influence pressures were present, however, the low acquiescent Ss rated the stimulus materials as being more difficult to judge. The same

TABLE 5

SUMMARY OF ANALYSIS OF VARIANCE FOR RATINGS OF DIFFICULTY

Source	df	MS	F
Influence (I)	1	.126	---
Acquiescence (A)	1	2.775	---
Majority size (M)	1	.391	---
Ambiguity (Am)	1	1684.547	302.727***
I X A	1	34.835	6.260**
I X M	1	1.780	---
I X Am	1	7.570	1.360
A X M	1	24.376	4.381*
A X Am	1	2.980	---
M X Am	1	1.195	---
I X A X M	1	8.076	1.451
I X A X Am	1	7.736	---
I X M X Am	1	.001	---
A X M X Am	1	.355	---
I X A X M X Am	1	10.263	1.844
Error: Within treatments	160	5.565	
Total	175		

*$p < .05$
**$p < .025$
***$p < .001$

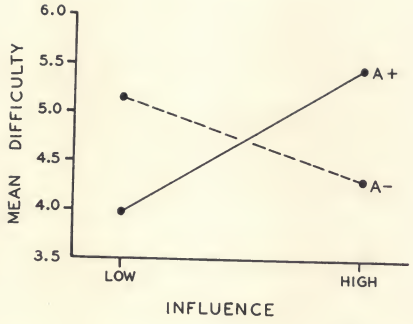

Figure 5.--Mean difficulty ratings for low and high influence pressures at high (A+) and low (A-) levels of acquiescence.

type of effect is seen for the A X M interaction, in Figure 6. The high acquiescent Ss found the materials more difficult to judge when the majority consisted of three other Ss, whereas the low acquiescent Ss found the materials more difficult to judge when the majority consisted of only one other S.

Question 3. "How confident were you of the correctness of the judgments you made?"

A summary of the 2 X 2 X 2 X 2 analysis of variance carried out on the confidence in self ratings is given in Table 6. Means and standard deviations of the confidence

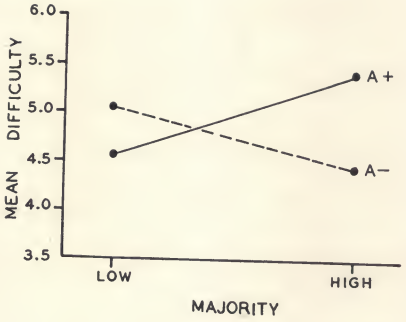

Figure 6.--Mean difficulty ratings for low and high majority size at high (A+) and low (A-) levels of acquiescence.

in self ratings for each treatment combination are reproduced in Appendix D. The ambiguity of the stimulus materials had the strongest influence on S's rating of confidence in his own judgments ($p < .001$). The mean confidence for the high ambiguity stimuli was 5.602, and 10.218 for the low ambiguity stimuli.

Influence also had a significant effect ($p < .01$) on S's rating of confidence in the correctness of his

TABLE 6

SUMMARY OF ANALYSIS OF VARIANCE FOR RATINGS OF CONFIDENCE IN SELF

Source	df	MS	F
Influence (I)	1	45.411	8.630**
Acquiescence (A)	1	.204	---
Majority size (M)	1	3.782	---
Ambiguity (Am)	1	937.491	178.153***
I X A	1	9.091	1.728
I X M	1	27.366	5.200*
I X Am	1	39.520	7.510**
A X M	1	21.560	4.097*
A X Am	1	.131	---
M X Am	1	3.218	---
I X A X M	1	.263	---
I X A X Am	1	27.524	5.230*
I X M X Am	1	8.642	1.642
A X M X Am	1	13.978	2.656
I X A X M X Am	1	8.033	1.526
Error: Within treatments	160	5.262	
Total	175		

*$p < .05$
**$p < .01$
***$p < .001$

own judgment. The mean confidence rating without influence pressures was 7.402, and 8.418 when influence pressures were present. Hypothesis 3b is considered confirmed for influence and ambiguity.

The I X Am interaction was significant at the .01 level of confidence, and is presented graphically in Figure 7. When judging the low ambiguity stimuli, the presence or absence of influence had no effect on S's rating of confidence in his judgments. When judging the high ambiguity stimuli, S's rating of confidence in the correctness of his judgments was higher in the presence of influence pressures than when they were absent.

The I X M and A X M interactions were significant at the .05 level of confidence. Figure 8 indicates that the high majority variable increased S's rating of confidence in his own judgment when influence pressures were present.

The acquiescence variable interacted with majority size for the confidence in self ratings (Figure 9). The high acquiescent Ss expressed lower confidence in the correctness of their own judgment under high majority treatment combinations than low majority treatment combinations, whereas the low acquiescent Ss expressed more confidence in the correctness of their own

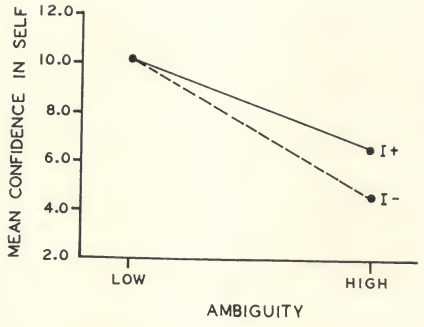

Figure 7.--Mean confidence in self ratings for low and high ambiguity with influence pressures present (I+) and absent (I-).

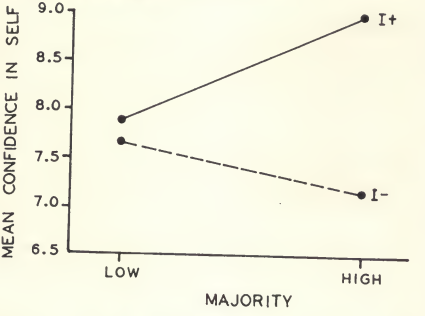

Figure 8.--Mean confidence in self ratings for low and high majority size with influence pressures present (I+) and absent (I-).

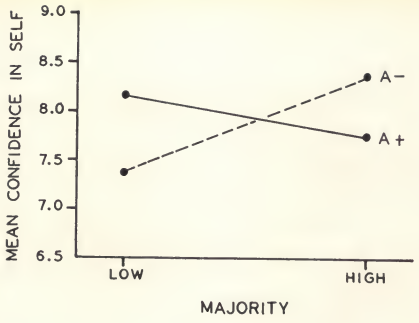

Figure 9.--Mean confidence in self ratings for low and high majority size at high (A+) and low (A-) levels of acquiescence.

judgment under high majority treatment combinations.

The triple interaction, I X A X Am, was significant at the .05 level of confidence, and is presented graphically in Figure 10. This interaction is most meaningfully interpreted as the interaction of acquiescence with the significant double interaction I X Am (shown in Figure 7). For the low acquiescent Ss, the presence of influence pressures increased their confidence in self rating almost equally for the low and high ambiguity stimuli. For the high acquiescent Ss, the presence of influence decreased the confidence in self

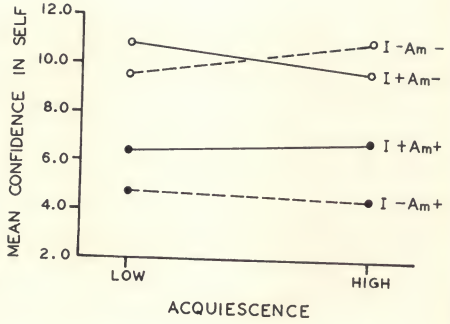

Figure 10.--Mean confidence in self ratings at low and high levels of acquiescence for high (Am+) and low (Am-) levels of ambiguity, with influence pressures present (I+) or absent (I-).

ratings for the low ambiguity stimuli, and increased the confidence in self ratings for the high ambiguity stimuli.

Question 4. "How confident were you of the correctness of the judgments of the others?"

A 2 X 2 X 2 analysis of variance carried out on the ratings of confidence in others failed to reveal any significant effects produced by the experimental variables. A summary of the analysis of variance is given in Appendix E. Hypothesis 3c was therefore not supported.

Question 5. "How many times did you disagree with the others?"

A 2 X 2 X 2 analysis of variance carried out on the perceived disagreement scores failed to reveal any significant treatment effects. A summary of the analysis of variance is given in Appendix E. Therefore, Hypothesis 5 was not supported. The perceived disagreement scores were categorized into frequencies of underestimation, correct estimation, and overestimation of disagreement, and compared with the experimental variables by chi-square. Only the acquiescence variable approached significance ($x^2 = 5.13$, 2 df, $p < .10$). Although only suggestive, low acquiescent Ss tended more often to estimate correctly the number of disagreements.

Chi-square tests were carried out on the frequencies of "Yes" and "No" responses to Questions 6 through 9 (Table 7), dichotomized in terms of the high and low levels of acquiescence, of majority size, and of ambiguity. The acquiescence variable failed to affect significantly the responses to any of the questions. The results for majority size and ambiguity were as follows:

Question 6. "Would you say that you were seriously concerned about those times that you disagreed with the others?"

Only the chi-square value for majority size was significant ($p < .02$), with high majority Ss indicating greater concern than low majority Ss.

TABLE 7

FREQUENCY ANALYSES FOR POSTEXPERIMENTAL QUESTIONS 6 THROUGH 9

Question 6

		Yes	No
Majority	+	12	32
	-	3	44

$x^2 = 6.51$, $p < .02$

Question 7

		Yes	No
Majority	+	26	18
	-	15	29

$x^2 = 5.53$, $p < .02$

		Yes	No
Ambiguity	+	29	15
	-	12	32

$x^2 = 13.20$, $p < .001$

Question 8

		Yes	No
Majority	+	31	13
	-	10	34

$x^2 = 20.14$, $p < .001$

		Yes	No
Ambiguity	+	29	15
	-	12	32

$x^2 = 13.20$, $p < .001$

Question 9

		Yes	No
Majority	+	24	20
	-	3	41

$x^2 = 23.56$, $p < .001$

		Yes	No
Ambiguity	+	19	25
	-	8	36

$x^2 = 6.47$, $p < .02$

Question 7. "Did the others make you doubtful about your accuracy?"

The chi-square value for majority size was significant at the .02 level of confidence. Here also, Ss in the high majority conditions expressed more doubt. The chi-square value for ambiguity was highly significant ($p < .001$), with Ss in high ambiguity conditions expressing more doubt.

Question 8. "Would you say that you were tempted at times to answer as the others did?"

Both majority size and ambiguity significantly ($p < .001$ for both variables) affected responses to this question. Subjects in the high majority and high ambiguity conditions indicated that they were tempted to answer as the others did more frequently than Ss receiving the low levels of each variable.

Question 9. "Did you ever answer as the others did, against your own first choice?"

The number of Ss in the high majority treatment combinations responding "Yes" to this question was higher than in the low majority treatment combinations ($p < .001$). High ambiguity stimuli also produced more "Yes" responses than did the low ambiguity stimuli ($p < .02$).

Question 10. "The results of this study depend to a large degree upon separating those persons who

have prior knowledge about either this particular experiment or other similar experiments (or those using similar types of apparatus) from those who do not have any information about it. Please indicate below whether you did have prior information of any type. You will, of course, receive experimental credit in either case. If you have any doubts about how to answer this question, the experimenter will be glad to help you.

"If yes, please indicate below what you knew or had heard, and where or how you received this information (for example, from previously serving in a similar experiment, from class discussion, a text book, another student, etc.)."

As with Question 1, the qualitative data obtained were for the purpose of judging S's prior knowledge of the experiment, and need no further analysis here.

Correlational Analyses

Table 8 presents the Pearson product moment correlation coefficients for the conformity scores, and the ratings of difficulty, confidence in self, and confidence in others for the I+ treatment combinations. As predicted (Hypothesis 4a), the correlation between conformity scores and difficulty ratings was positive and significant ($p < .01$), indicating that those who conformed more also indicated that the choice of a correct alternative was more difficult. The

TABLE 8

CORRELATIONS FOR CONFORMITY SCORES, AND RATINGS OF DIFFICULTY, CONFIDENCE IN SELF, AND CONFIDENCE IN OTHERS (N=88)

	Difficulty	Confidence in self	Confidence in others
Conformity	.517*	-.359*	.195
Difficulty		-.654*	.076
Confidence in self			-.119

*$p < .01$

significant ($p < .01$) negative correlation between conformity scores and confidence in self ratings provides support for Hypothesis 4c, indicating that high conforming Ss rated their confidence in the correctness of their own judgment lower than did low conforming Ss.

Hypothesis 4b, which predicted a significant positive relationship between conformity scores and ratings of confidence in others was not supported. The correlation failed to reach an acceptable significance level, although it was in the predicted direction.

There was a significant ($p < .01$) negative correlation between ratings of difficulty and confidence in self. The correlation between ratings of difficulty and confidence in self in the control conditions was

-.904 (N = 88), as contrasted with a correlation of -.654 (N = 88) in the experimental treatment combinations. The difference between the coefficients (z transformation [McNemar, 1955]) is significant at the .001 level of confidence.

The correlation between conformity scores and perceived disagreement scores was -.155 (N = 80), which was not significant.

Summary of the Results

Both majority size and ambiguity were found to affect conformity behavior significantly. The effects of acquiescence can only be regarded as suggestive. In interaction, the combination of high levels of majority size and ambiguity produced proportionately more conformity than the low levels, whereas the effects of acquiescence levels were observable when either the ambiguity or the majority size variable was high, and the other variable low. The treatment combinations containing high levels of ambiguity and majority size produced the greatest conformity, followed by the combination of high ambiguity and low majority size. Below this level were the treatment combinations containing low ambiguity and high majority size, with the low levels of all three variables producing the smallest amount of conformity (which was not significantly

different from the control treatment combinations).

For the postexperimental questionnaire data, difficulty ratings were significantly affected by ambiguity. High acquiescence Ss rated difficulty higher when influence pressures were present, and under high majority size. Ratings of confidence in self were significantly affected by influence and ambiguity. Various combinations of influence, acquiescence, majority size, and ambiguity also interacted to affect the confidence in self ratings. Neither confidence in others nor perceived disagreement were affected by the experimental variables. The remaining questionnaire items dealt with S's feelings concerning disagreement with the majority judgment. Both majority size and ambiguity significantly affected responses to these questions, but acquiescence did not.

A significant positive relationship was found between conformity scores and ratings of difficulty, and significant negative relationships between conformity scores and ratings of confidence in self, and between ratings of difficulty and confidence in self. A significantly stronger negative relationship between ratings of difficulty and confidence in self was obtained in the control treatment combinations than in the experimental treatment combinations.

DISCUSSION

Conformity and Acquiescence, Majority Size, and Ambiguity

The results of this study offer support for the thesis of the additivity effects of a combination of variables on conformity behavior.

Both ambiguity and majority size had highly significant effects on conformity, with the high level of each variable producing more conformity than the low level of the same variable, as predicted. The findings for both variables are in full accord with previous research. Both Crutchfield (1955) and Reitan (1962), for example, have reported similar differences using lines and geometric figures as the stimulus materials. The significance of the majority size variable fully supports the previous research on this variable. Because of the similarity of the low ambiguity stimulus materials in this study to those used by Asch (1951, 1952, 1956), particular support is given to his findings.

The effects of acquiescence were in the predicted direction, but because of the significance level of the F ratio for this variable ($p < .10$), its influence

on conformity has not been conclusively demonstrated. The failure of the acquiescence variable to reach an acceptable level of significance is not surprising, however, in view of the generally inconclusive and/or contradictory findings of most prior research on the relationship of organismic or personality variables with conformity. At a later point, some possible reasons for the failure of personality characteristics to demonstrate a strong effect on conformity will be indicated.

The second hypothesis dealt with the interactive effects of variables on conformity. In the most obvious form of interaction, it was predicted that the combination of high levels of all three variables would produce more conformity than the combination of low levels of all three variables, and this difference was found.

The combination of the low levels of ambiguity and majority size with either high or low acquiescence was found not to differ significantly from any of the control groups judging the low ambiguity stimuli, supporting the hypothesis that these combinations were below the threshold value necessary for the elicitation of conformity behavior. This result is comparable to Asch's (1958) report that the majority effect "all but disappeared" when the majority consisted of only one

other S. The fact that there was no difference in the levels of acquiescence when both ambiguity and majority size were low lends weight to the conceptualization of acquiescence as a weak variable.

More specifically relating to the interactive effects, it was found that ambiguity and majority size each had a proportionately greater effect when combined with the high level of the other variable than when combined with the low level of the other variable. It appears that when the variables are above the threshold level, the stronger the variables combined, the more enhanced will be the conformity behavior elicited. In view of the findings on acquiescence, however, it is suggested that the enhancing effect is produced most readily when the variables being combined all have relatively strong effects on conformity individually. Acquiescence was found to exert differences in conformity only when the combined pressures of the other variables were moderate. No differences in acquiescence were found when pressure from both of the other variables was extremely low or extremely high. At least two inferences may be made on the basis of this finding. When a variable of weak to moderate strength is the independent variable in a conformity study, differences in the levels of the variable may be obscured by the presence in the

influence situation of other pressures which are very strong or very weak. Goldberg (1954), for example, found no differences in conformity due to varying the size of the group. His procedure for exposing Ss to the group size variable was such as to make it extremely logical to consider the pressures exerted as extremely weak. Further, his stimulus task was highly ambiguous. In view of the findings of the present study, therefore, it is suggested that the effects of the group size variable may have been overridden by the strong stimulus variable.

If the assumption is made that findings on acquiescence in this study are typical of the general findings with personality variables (which seems reasonable on the basis of a review of the literature pertaining to the relationship between personality characteristics and conformity), it may be that the failure to find significant differences was due to the imprecision of the measuring instrument. This is a general fault of personality measuring instruments, and could account for the failure to find significant differences in personality characteristics in the present study, and in previous studies. On the other hand, it may be that personality variables generally are fairly weak influences on conformity. Construed

in this way, contradictory findings with the same personality variable may well have been due to noticeable differences in the level of pressure exerted by the stimulus and social background factors between the studies involved. Similarly, the failure to find a significant relationship between a personality variable and conformity may have been due to the level of pressure exerted by the other factors, which could have obscured the effects of the personality variable. Differences in the ratings of difficulty and confidence in self, discussed below, were affected by the acquiescence characteristics of S, however, suggesting that personality characteristics are not without effect in the conformity situation, even though not expressed significantly in the conformity responses themselves.

A review of previous research findings suggested that ambiguity, majority size, and acquiescence exert different amounts of influence pressure, with ambiguity the highest, and acquiescence the lowest, of the three studied. On the basis of this assumption, it was hypothesized that the combination of high ambiguity and low majority would produce more conformity than low ambiguity and high majority; and that within this range, differences in the level of acquiescence would determine the particular order. The predicted order of the treatment combinations was supported by the results. In the two instances where a single reversal

occurred, the means of the two treatments involved were found not to be significantly different. The confirmation of this hypothesis lends support to the interpretation of particular influence pressures having an effective operating range, and, more specifically, supports the rank-ordering of the three variables in terms of the amount of conformity each is capable of exerting.

Conformity and Supplementary Measures

The results obtained from the supplementary measures suggest that the acquiescence characteristics of S did affect responses in the experimental situation, even though these effects were not strongly evident in the conforming responses. High and low acquiescent Ss responded differently to the experimental treatments, both in their ratings of difficulty of choosing the correct alternative, and in their ratings of confidence in the correctness of their own judgments.

In the Introduction, it was suggested that the high acquiescent S would tend to depend on social reality (the judgments of others) as the basis for the validity of his own judgment. In terms of the results of the present study, it is suggested that both high and low acquiescent Ss depend upon social reality, but in different ways. For the low acquiescent S, the judgment of others provides structure to the judging

situation. It also provides him with a frame of reference for evaluating his own judgment. For the high acquiescent S as well, the judgment of others provides structure to the judging situation. In addition, he is sensitive to the direction of the majority judgment, and responds more in terms of his perceived agreement or disagreement with the majority judgment than does the low acquiescent S.

For both the high and low acquiescent Ss, the high ambiguity stimuli were rated as much more difficult to judge than the low ambiguity stimuli--slightly more than half of the scale range fell between the difficulty means for the two levels of ambiguity. The high acquiescent Ss, however, felt that it was more difficult to pick the correct choice both when they were exposed to the judgment of others (I+), and when these judgments came from three other Ss, as opposed to only one other S, suggesting a greater sensitiveness to agreement with the majority judgment. If the judgment of the majority is different from his own, then it follows that he would feel the choice was more difficult than would the individual who is less sensitive to the direction of the majority judgment. This finding, however, does not appear to support the conceptualization by Bass (1956) of the socially acquiescent individual as an "uncritical, unquestioning conformer," since his conceptualization implies that a

high acquiescent individual would uncritically accept the majority judgment, and therefore not find the choice a difficult one.

There was a significant positive relationship between amount of conformity and S's rating of difficulty in choosing a correct alternative, which is consistent with previous research findings (Blake, Helson, and Mouton, 1956; Coleman, Blake, and Mouton, 1958).

The confidence an individual expressed in the correctness of his judgments was significantly influenced by the level of ambiguity, with the confidence rating much higher for the low ambiguity stimuli than for the high ambiguity stimuli.

Subjects were more confident of the correctness of their judgments when they were exposed to the judgments (purportedly) of the other Ss than when they indicated their judgments without knowing the judgments of the others, with differences in influence occurring almost entirely at the high ambiguity level. For the low ambiguity stimuli, the presence or absence of influence had no effect on S's confidence rating. Knowledge of the judgments of others for the high ambiguity stimuli, however, increased S's confidence in the correctness of his own judgment. Since the correlation between conformity scores and confidence in self ratings was low, although significant, the explanation for the

increase in confidence cannot primarily be accounted for in terms of the amount of conformity exhibited by S. It is suggested that the situation in which the correct alternative is not directly observable is anxiety-inducing, so that knowledge of the judgments of others, whether S agrees with them or not, provides a frame of reference against which S may evaluate his own judgment, which in turn may lead to confidence in the correctness of his judgments. (A simpler explanation, although perhaps less adequate overall, is that on some trials--noncritical--the majority choice was correct, and S's agreement with the majority on these trials was enough to increase his confidence in the correctness of his own judgments.)

The combined effects of influence and ambiguity were different for the levels of acquiescence, however. For the low acquiescent S, knowledge of the judgment of others had equal effects at the two levels of ambiguity, suggesting that knowledge of others' judgments provided the necessary structure for increased confidence in his own opinion. For the high acquiescent S, whose confidence was more dependent on the correspondence between the judgment of others and his own, knowledge of the majority judgment had different effects at the two levels of ambiguity. At the low level of ambiguity, where the correct alternative was obvious, knowledge of

the incorrect majority choice reduced S's confidence in the correctness of his own judgment. At the high level of ambiguity, knowledge of the judgment of others provided the necessary structure to increase S's confidence.

Majority size interacted with both influence and acquiescence to affect the confidence in self ratings. When influence pressures were present, the high level of majority size increased S's confidence in the correctness of his judgments to a greater extent than did the low level of majority size. Considered in terms of levels of acquiescence, the effect of the majority levels for the low acquiescent Ss was the same as the general effect over levels of acquiescence; i.e., under high majority conditions, S's confidence rating was higher. For the high acquiescent Ss, however, the mean confidence ratings were higher at the low level of majority size, and lower at the high level of majority size than the mean for the low acquiescent Ss. Assuming that the overall effect of majority size was to increase the confidence rating, then differences lie primarily with the high acquiescent Ss. Again assuming that the high acquiescent Ss are more sensitive to the majority judgment, it seems logical to infer that with an increase in the number of judgments opposing his own, S would become less confident of the correctness of his own judgment.

In the control conditions, S's confidence in the correctness of his own judgment can be almost totally accounted for by how difficult he felt it was to choose the correct alternative. The correlation between confidence in self and difficulty ratings was significantly smaller in the experimental conditions, although still sizeable. The difference in the correlations supports the findings discussed above, suggesting that additional factors in the I+ conditions affected S's confidence in self rating.

The failure of the confidence in the correctness of others rating to be affected either by the experimental variables or to correlate significantly with the conformity scores may be artifactual. Subjects were asked to rate their confidence in the correctness of the judgment of others immediately following their rating of confidence in their own judgment. It is suggested that conceptually these two ratings were not independent; i.e., the rating of confidence in others was not "pure", since S had just rated confidence in his own judgment. The design of the present experiment precludes determination or evaluation of factors which may have affected the rating.

Although the analysis of variance for the perceived disagreement scores failed to reveal that the experimental

variables had any significant effect, the grosser measure of categorizing scores into frequencies of underestimation, correct estimation, and overestimation of disagreement with the majority and testing by chi-square suggested that low acquiescent Ss tended more often to correctly estimate their disagreement with the majority choice. Combined with the interpretation of the confidence in self ratings, this finding suggests that, for the low acquiescent S, the increase in confidence due to the knowledge of the judgment of others was not due to the fact that he was unaware of his disagreement with the majority.

Responses to the other four questionnaire items (Questions 6 through 9) are supportive of the experimental findings indicated above. Subjects in the high majority condition were seriously concerned about the times that they disagreed with the others significantly more often than Ss in the low majority conditions. In addition, they were more doubtful of their accuracy, were tempted to answer as the others did more often, and indicated that they did in fact answer as the others did against their own first choice, more often than Ss in the low majority conditions.

Subjects in the high ambiguity conditions indicated that they were more doubtful about their accuracy, were tempted to answer as the others did against their own first choice more often, and that they had answered as

the others did more often than Ss in the low ambiguity conditions. This suggests that, since the correct alternative was less obvious for the high ambiguity stimuli, either Ss were not aware of their disagreement with the majority, or if they were aware of it, this caused them little concern by virtue of the fact that the correct choice was not obvious.

Theoretical Considerations

In the Introduction, it was suggested that there are both lower and upper limits on the effectiveness of influence pressures in producing conformity behavior. Specifically, it was suggested that influence pressures must reach a certain level before they effectively generate conformity behavior. Above this level, influence pressures proportionately increase conformity behavior as they become stronger, until they reach an upper limit determined by the maximum amount of conformity behavior S will exhibit. Beyond this limit, adding additional pressures or increasing the strength of existing pressures has no effect stronger than that present at the upper limit. The curve depicting the amount of conformity for this conceptualization would be low and flat when influence pressures were below the lower limit, rise at a positively accelerated rate as the influence pressures increased in strength, and level off as the upper limit was reached.

Because the placement of the treatment combinations in the present study on the curve conceptualized above was not predicted prior to the collection of data, the following interpretation is of course *ad hoc*, and can only be considered suggestive. It should be noted, however, that conceptualization of the curve, and the weighting system, were derived from the results obtained by previous one-variable experiments, rather than from the results of the present study. Prediction and subsequent confirmation of the rank-ordering of the treatment combinations lends support to the interpretation.

Weights of 3, 2, and 1 were assigned to the low levels of ambiguity, majority size, and acquiescence, respectively. The weights were doubled for the high levels of each variable. The eight experimental treatment combinations were then weighted accordingly, and the mean conformity score for each treatment combination was plotted in terms of the numerical ordering of the summed weights. Table 9 gives the ordering of the treatment combinations by the mean conformity scores, and the weights assigned to each treatment combination. Brackets indicate the lack of significant difference ($\alpha = .01$) between any two means enclosed in the same bracket. (See the footnote to Table 4 for a fuller explanation of the brackets.) The resulting curve is reproduced in Figure 11, and is essentially in accord with the conceptualization presented above.

TABLE 9

WEIGHTS OF THE EXPERIMENTAL TREATMENT COMBINATIONS, AND THE MEANS OF THE CONFORMITY SCORES FOR EACH TREATMENT COMBINATION

Treatment Combinations	Each Mean is Based on 11 Ss Mean	Weights[b]
A+M+Am+	2.691 [a]	12
A-M+Am+	2.535	11
A+M-Am+	1.810	10
A-M-Am+	1.523	9
A+M+Am-	1.544	9
A-M+Am-	1.066	8
A+M-Am-	.881	7
A-M-Am-	.942	6

[a]Brackets indicate no significant differences between any two means enclosed within the same bracket.

[b]Weights were determined as follows:

	Low	High
Am	5	6
M	2	4
A	1	2

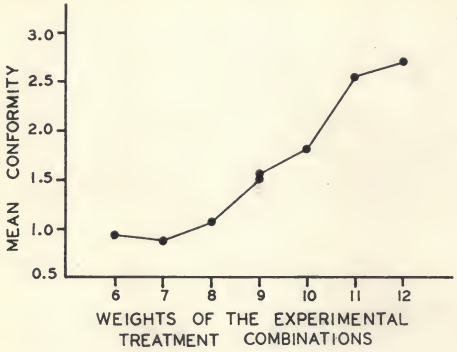

Figure 11.--Mean conformity scores for the experimental (I+) treatment combinations, ordered in terms of the weights assigned to the combinations of the variables.

The means for the treatment combinations weighted 6 and 7 were not significantly different from each other, nor were they different from the control means for the low ambiguity conditions falling below them, suggesting that these two treatment combinations were below threshold. The mean for the condition weighted 8 was not significantly different from those weighted 6 and 7, but it was different from the control conditions, suggesting that it was at or just above the threshold.

The two means weighted as 9 were subsequently found not to be significantly different, which lends support to the weighting system, and indicates that either the combination of pressures generated by high acquiescence and high majority size, or the single high pressure generated by high ambiguity was sufficient to produce a significant increase in conformity. The means for the corresponding weights of 11 and 12 were also found not to be significantly different. The apparent leveling-off effect here, however, needs further explanation.

It is not believed that the high ambiguity stimuli used in the present study were maximally ambiguous, or were capable of eliciting the maximum amount of conformity attributable to stimulus ambiguity. Sherif and Sherif (1956), Luchins and Luchins (1955b), and Crutchfield (1955), for example, have reported about 80 per cent conformity with stimuli more ambiguous than those used in the present study, as ambiguity was defined in this study. Previous research using geometric figures (e.g., Crutchfield, 1955; Reitan, 1962) has indicated that approximately 35 per cent to 45 per cent conformity results with the use of geometric figures. This concurs with the results of the present study, in which the conformity attributed to the area stimuli was 45 per cent. It is suggested that, in addition to the limit set by the maximum conformity exhibited by S, there are also

limits imposed by the effectiveness of the particular influence pressure being exerted. Asch's (1958) finding that increasing the size of the majority beyond three did not increase the amount of conformity is an example.

The earlier rank-ordering of ambiguity, majority size, and acquiescence may now be more precisely characterized in terms of the range and upper limit of effectiveness of each variable--that is, the range is greater and the upper limit is higher for ambiguity than for majority size, and in turn the range and upper limit is greater for majority size than for acquiescence. Support for this interpretation may be found by examining the order of the means for the experimental treatment combinations. At the upper and lower ends (means weighted 6-7, and 11-12 in Table 9), differences in acquiescence with the levels of ambiguity and majority size held constant had no significant effect. Within the middle range, the levels of acquiescence are significantly different from each other for those treatment combinations where ambiguity and majority size are constant (i.e., the mean weighted 10 is significantly greater than the mean weighted 9, and the mean weighted 9 is significantly greater than that weighted 8). Significant differences for majority size with the other

variables held constant occur for all ranks above 8. Significant differences for ambiguity occur for each of the matched comparisons.

SUMMARY

The purpose of the present study was to investigate the interactive effects of variables influencing conformity. The experimental work of Sherif (1936) and Asch (1951, 1952, 1956) stimulated research on conformity, and as a result of subsequent research, a large number of variables have been related to conformity. The most common design employed has been the single-variable experiment, which has precluded determination of the interrelationships of variables on conformity.

Following Blake and Mouton (1961b), and Samelson (1957), influence pressures were conceptualized as arising from three sources: 1) the characteristics of the stimulus materials used; 2) the properties of the social context; and 3) the personal properties of the individual. One variable from each source was chosen for manipulation. They were: 1) stimulus ambiguity, 2) majority size; and 3) the social acquiescence characteristics of S.

A 2 X 2 X 2 X 2 factorial design was employed to test the effects of influence (experimental or control conditions), acquiescence (high or low, as determined by the Bass Social Acquiescence Scale), majority size (S

opposed by either three other persons or one other person), and ambiguity (high, defined as the judgment of the areas of geometric figures; or low, defined as the judgment of the Asch lines). On the basis of their acquiescence scores, 176 women were selected and randomly assigned to one of the sixteen treatment combinations. Using a modified Crutchfield apparatus, eleven Ss were observed under each treatment combination. At the end of the judging task, a questionnaire concerned with S's reactions to the experimental situation was administered.

It was found that ambiguity and majority size significantly affected the conformity produced ($p < .001$). Acquiescence was significant at the 10 per cent level. In interaction, proportionately more conformity was produced when the high levels of ambiguity and majority size were combined than when the low levels of each were combined. When one of the two variables was high and the other low, effects due to the level of acquiescence were evident. When both of the other variables were high or both were low, there was no difference between the levels of acquiescence.

From responses to the postexperimental questionnaire, it was found that the experimental variables had significant effects, either as main effects or in interaction, on S's rating of difficulty in determining the correct alternative in the judging task, and his confidence in the correctness of his choice. Determining the correct choice

was rated as more difficult under conditions of high ambiguity. High acquiescent Ss rated difficulty higher when influence pressures were present, and under conditions of high majority size, than did low acquiescent Ss.

Ratings of confidence in the correctness of one's own judgment were lower under conditions of high ambiguity, but higher overall when influence pressures were present. For the high acquiescent Ss, the presence of influence decreased the confidence in self ratings for the low ambiguity stimuli, and increased the confidence in self ratings for the high ambiguity stimuli. Neither confidence in the correctness of the judgment of others, nor the estimate of perceived disagreement with the others was affected by the experimental variables.

Conformity was found to correlate positively with S's rating of difficulty (.517), and negatively with his rating of confidence in his own judgment (-.359). The negative correlation between the ratings of difficulty and confidence in self was significantly higher ($p < .001$) in the control conditions (-.904) than in the experimental conditions (-.654).

On the basis of results from single-variable experiments, the ordering of the treatment combinations was predicted in terms of the amount of conformity produced. The prediction was confirmed by the results of the present study.

It was suggested that influence pressures, either singly or combined, must reach a threshold value before they elicit conformity, and that beyond this point the combination of stronger variables produces proportionately more conformity than the combination of weaker variables. The upper limit for the elicitation of conformity is determined by the maximum amount of conformity S will exhibit. The results of the present study offered support for this conceptualization.

It was concluded that variables do combine to produce conformity, and that the amount of conformity produced in combination is a function of the amount of conformity produced by the variables individually. The characteristics of the environmental situation have a strong effect on conformity behavior, but the personal properties of the individual upon whom pressure is being exerted cannot be ignored. Even though these personal properties may be less effective in determining conformity than environmental pressures, they have a definite effect on his evaluation of the situation within which he finds himself.

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APPENDICES

APPENDIX A

TABLE 10

DESCRIPTION OF THE LINE STIMULI

Stimulus Number	Standard Line	Comparison Lines		
1	3.75	3.31	3.75	3.00
2	.75	.75	.38	.56
3*	1.12	1.44	1.62	1.12
4*	1.88	1.88	1.50	2.44
5	1.50	1.12	1.88	1.50
6*	1.12	1.44	1.62	1.12
7*	2.25	1.69	2.62	2.25
8*	3.00	2.31	3.00	2.50
9*	2.62	2.81	3.00	2.62
10	1.88	1.88	1.50	2.44
11*	3.00	2.31	3.00	2.50
12*	2.25	1.69	2.62	2.25

*Critical stimuli.

Key: Underlined numbers indicate the majority response. Dimensions given are as they appeared on the stimulus oard, in hundredths of an inch.

APPENDIX A

TABLE 11

DESCRIPTION OF THE AREA STIMULI

Stimulus Number	Area	Size	
1	R 1.96	C 3.14	T 2.00
2	C 4.91	R 5.00	T 5.25
3*	R 5.50	C 4.91	T 5.25
4*	R 4.37	C 4.91	T 5.07
5	T 4.12	R 4.50	C 4.91
6*	R 3.25	T 2.67	C 3.14
7*	R 1.97	T 2.62	T 2.70
8*	T 4.12	T 4.00	C 4.91
9*	R 2.00	T 2.40	C 1.77
10	R 2.25	C 1.77	T 2.07
11*	T 4.50	C 4.91	T 4.24
12*	T 2.19	C 1.77	R 1.69

*Critical stimuli

Key: The geometric shape of each figure is represented by C (circle), R (rectangle), T (triangle). Underlined numbers indicate the majority response. Dimensions given are as they appeared on the stimulus card, in hundredths of an inch.

APPENDIX A

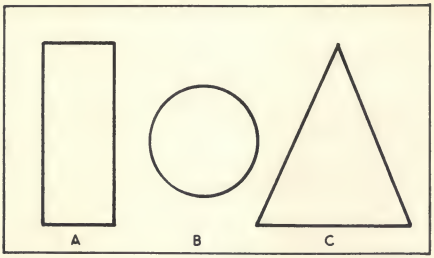

Figure 12.--A sample area stimulus card.

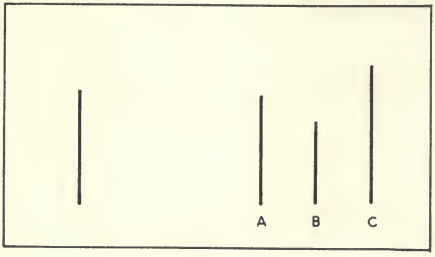

Figure 13.--A sample line stimulus card

APPENDIX B

TABLE 12

THE SOCIAL ACQUIESCENCE SCALE

DIRECTIONS: Indicate whether you agree (A), disagree (D), or are uncertain (?) about each of the following sayings by circling one of the three choices. Do not skip any of the items.

A ? D Success against odds is the greatest of American ideals.

A ? D Love is the greatest of Arts.

A ? D There is no satisfaction without a companion to share it.

A ? D Love of the opposite sex makes the world go round.

A ? D They never fail who die in a great cause.

A ? D He that has many friends need never fear disaster.

A ? D Destroyers of tyranny have contributed the most to mankind.

A ? D You only injure yourself when you take notice of despised critics.

A ? D The only known cure for fear is faith.

A ? D Our chief want in life is somebody who will make us do what we can.

A ? D Never trust a flatterer.

A ? D He who laughs last laughs longest.

A ? D No principle is more noble or holy than that of true obedience.

A ? D There is nothing which the body suffers which the soul may not profit by.

A ? D One false friend can do more harm than one hundred enemies.

A ? D Seeing is believing.

A ? D Still water runs deep.

A ? D Make yourself honey and the flies will eat you.

A ? D The grass is always greener in the other fellow's yard.

A ? D Most big cows have little horns.

A ? D Every man is blind to his own defects.

A ? D Jaws are the only part of the body that like to work.

A ? D Those in high places are in greater danger than those in lowly ones.

A ? D Life is a struggle from beginning to end.

A ? D Wild colts make good horses.

A ? D Empty heads go with loud talk.

A ? D You can't teach an old dog new tricks.

A ? D Count your sheep and the wolf will eat them.

A ? D Sleep is loved by everyone.

A ? D The feeling of friendship is like that of being comfortably filled with roast beef.

A ? D Who does not love the opposite sex remains a fool the whole life long.

A ? D Better one safe way than a hundred on which you are not sure.

A ? D We like best that which lies beyond our reach.

A ? D Amusement is the medicine for worry.

APPENDIX B

TABLE 13

THE POSTEXPERIMENTAL QUESTIONNAIRE

1. Please describe in your own words your experience during this experiment.

2. By putting a check mark on the line below, please indicate how easy or difficult you feel it is to pick the correct choice for this material.

   EASY_____DIFFICULT

3. How confident were you of the correctness of the judgments you made?

   VERY CONFIDENT_____NOT AT ALL CONFIDENT

4. How confident were you of the correctness of the judgments of the others?

   VERY CONFIDENT_____NOT AT ALL CONFIDENT

5. How many times did you disagree with the others? (Circle one of the numbers below)

   0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

6. Would you say that you were seriously concerned about those times that you disagreed with the others?

   _____YES
   _____NO

7. Did the others make you doubtful about your accuracy?

   _____YES
   _____NO

8. Would you say that you were tempted at times to answer as the others did?

_____YES

_____NO

9. Did you ever answer as the others did, against your own first choice?

_____YES

_____NO

10. The results of this study depend to a large degree upon separating those persons who have prior knowledge about either this particular experiment or other similar experiments (or those using similar types of apparatus) from those who do not have any information about it. Please indicate below whether you did have prior information of any type. You will, of course, receive experimental credit in either case. If you have any doubts about how to answer this question, the experimenter will be glad to help you.

___Yes, I did have prior knowledge or information.
___No, I did not have prior knowledge or information.

If you answered yes, please indicate below what you knew or had heard, and where or how you received this information (for example, from previously serving in a similar experiment, from class discussion, a text book, another student, etc.).

APPENDIX C
TABLE 14

INDIVIDUAL RAW SCORES BY TREATMENT COMBINATIONS
HIGH ACQUIESCENCE (A+) HIGH MAJORITY (M+)
INFLUENCE PRESENT (I+)

Raw Conformity	Transformed Conformity	Acquiescence	Postexperimental Questionnaire Items 2	3	4	5	6	7	8	9
HIGH AMBIGUITY (Am+)										
11	3.391	34	11.0	2.2	2.0	.67	0	1	1	1
4	2.121	25	3.9	6.8	4.4	.83	1	1	1	1
4	2.121	40	8.2	7.9	6.6	--	0	1	1	0
10	3.240	28	7.2	7.8	8.0	.57	0	1	1	1
12	3.536	29	10.7	3.1	11.8	.67	0	1	1	1
5	2.345	34	11.0	11.3	1.3	.92	1	1	1	1
5	2.345	33	10.2	5.6	6.3	1.29	1	1	1	1
14	3.808	27	11.3	1.1	1.2	1.00	0	1	1	1
1	1.225	25	11.0	7.1	6.8	.79	1	1	0	0
6	2.550	25	5.2	10.0	3.6	.45	0	0	1	0
8	2.916	30	11.5	11.6	0.6	.80	0	1	1	1
LOW AMBIGUITY (Am-)										
1	1.225	41	4.5	11.0	3.2	.67	0	0	0	0
2	1.581	28	0.9	10.0	1.8	.50	0	1	0	1
0	.707	32	0.8	11.6	11.4	.75	1	0	0	0
0	.707	31	0.5	11.7	1.8	1.25	0	0	0	0
6	2.550	25	10.6	11.5	1.7	—	0	1	1	1
1	1.225	25	0.5	11.8	0.7	.67	0	1	1	0
1	1.225	27	7.2	7.3	6.3	.50	0	0	1	0
7	2.739	27	7.0	4.4	6.5	.57	1	1	1	1
0	.707	26	1.0	10.9	3.4	1.00	0	0	1	0
2	1.581	28	1.4	9.6	0.6	1.22	0	0	0	1
7	2.739	31	0.5	10.0	0.0	.78	1	1	1	1

APPENDIX C
TABLE 14

INDIVIDUAL RAW SCORES BY TREATMENT COMBINATIONS
HIGH ACQUIESCENCE (A+) LOW MAJORITY (M-)
INFLUENCE PRESENT (I+)

Raw Conformity	Transformed Conformity	Acquiescence	Postexperimental Questionnaire Items 2	3	4	5	6	7	8	9
HIGH AMBIGUITY (Am+)										
2	1.581	29	3.3	4.0	1.8	1.18	0	0	0	0
0	.707	28	7.5	10.3	1.9	1.00	0	1	0	0
0	.707	25	12.0	0.0	0.0	.90	0	1	1	0
6	2.550	33	7.0	6.4	4.6	.77[a]	0	1	1	0
7	2.739	31	8.7	7.0	6.9	.64	0	1	1	0
4	2.121	34	7.4	7.6	5.9	.64	0	1	1	1
4	2.121	37	8.8	6.6	3.6	.88	0	0	1	1
6	2.550	28	6.9	7.2	6.9	1.15	0	0	0	0
2	1.581	26	3.2	6.5	4.6	.94	0	0	1	0
0	.707	32	5.5	7.1	6.8	.67	0	1	0	0
6	2.550	26	10.2	11.5	0.8	.64	0	0	1	0
LOW AMBIGUITY (Am-)										
0	.707	28	1.8	9.8	5.1	.76	0	0	0	0
1	1.225	36	3.1	4.0	1.7	--	0	0	0	0
1	1.225	33	4.0	9.0	3.1	.62	0	1	0	0
0	.707	27	0.8	11.1	1.0	1.12	0	0	0	0
0	.707	25	0.6	11.5	2.7	1.06	0	0	0	0
0	.707	25	0.3	11.8	0.7	.62	0	0	0	0
0	.707	25	0.4	12.0	1.1	1.12	0	0	0	0
0	.707	25	6.0	8.8	2.6	.25	0	1	0	0
0	.707	35	0.2	7.5	6.5	.38	0	1	1	0
2	1.581	38	1.2	8.4	6.2	.43	0	0	0	0
0	.707	37	4.9	9.5	2.2	.71	0	1	0	0

[a]Omitted in all analyses on this question.

APPENDIX C
TABLE 14

INDIVIDUAL RAW SCORES BY TREATMENT COMBINATIONS
LOW ACQUIESCENCE (A-) HIGH MAJORITY (M+)
INFLUENCE PRESENT (I+)

Raw Conformity	Transformed Conformity	Acquiescence	Postexperimental Questionnaire Items 2	3	4	5	6	7	8	9
HIGH AMBIGUITY (AM+)										
16	4.062	16	2.7	11.2	12.0	0	0	1	1	1
5	2.345	15	9.2	10.0	6.6	1.36	0	0	1	1
7	2.739	16	5.6	9.5	6.3	.86	1	1	1	1
4	2.121	13	3.5	10.5	3.8	1.00	0	0	0	0
5	2.345	3	6.0	5.2	4.2	.62	0	1	1	1
2	1.581	8	5.3	9.0	2.7	.87[a]	1	1	1	1
2	1.581	7	8.0	6.6	2.0	.41	0	1	1	0
8	2.916	14	9.2	6.4	1.8	1.00	0	1	1	1
12	3.535	0	1.2	7.8	7.7	1.00	1	1	1	1
9	3.082	12	10.6	4.7	3.8	.89	0	1	1	1
2	1.581	10	9.9	9.2	2.4	1.16	0	1	1	0
HIGH AMBIGUITY (Am-)										
3	1.871	9	1.7	10.5	1.8	--	1	0	0	0
0	.707	6	0.5	11.5	3.1	.50	0	0	0	0
0	.707	14	2.0	10.4	6.4	.88	0	0	0	0
1	1.225	11	1.7	9.5	0.7	.67	0	1	1	1
0	.707	15	5.2	10.2	8.8	1.25	1	0	1	0
0	.707	16	0.4	11.8	0.6	.62	0	0	1	0
0	.707	16	0.8	11.3	11.0	.94	0	0	0	0
2	1.581	11	0.2	11.7	1.1	.40	0	1	0	0
2	1.581	10	0.1	11.9	0.6	1.00	0	0	1	1
0	.707	9	0.3	11.8	1.6	1.25	0	0	0	0
1	1.225	14	1.1	9.2	6.2	.67	0	0	1	1

[a]Omitted in all analyses on this question.

APPENDIX C
TABLE 14

INDIVIDUAL RAW SCORES BY TREATMENT COMBINATIONS
LOW ACQUIESCENCE (A-) LOW MAJORITY (M-)
INFLUENCE PRESENT (I+)

Raw Conformity	Transformed Conformity	Acquiescence	Postexperimental Questionnaire Items							
			2	3	4	5	6	7	8	9
HIGH AMBIGUITY (Am+)										
3	1.871	16	8.0	4.0	3.4	.86	0	0	0	0
1	1.225	15	5.7	6.6	5.6	.67	0	1	1	1
1	1.225	3	7.1	5.4	1.5	.58	0	0	0	0
2	1.581	15	8.3	3.7	6.6	.94	0	0	0	0
0	.707	9	8.0	3.9	3.4	1.00	0	1	0	0
2	1.581	10	7.4	5.4	6.7	1.17	0	0	0	0
4	2.121	7	9.7	4.6	3.8	.76	0	1	1	0
1	1.225	4	5.6	10.5	5.1	1.00	0	0	0	0
4	2.121	13	7.2	3.5	5.7	--	1	0	0	0
1	1.225	7	10.6	2.3	1.7	1.00	0	1	0	0
3	1.871	11	11.3	1.0	0.7	1.12	0	1	0	0
LOW AMBIGUITY (Am-)										
0	.707	16	0.5	11.6	0.3	--	0	0	0	0
1	1.225	16	0.5	11.6	1.1	1.20	1	0	0	0
0	.707	15	2.6	10.3	3.1	.71	0	0	0	0
1	1.225	15	5.6	6.9	11.6	.60	0	0	0	0
0	.707	8	1.4	10.7	1.2	1.12	0	0	0	0
1	1.225	5	0.9	9.7	6.5	.75	0	0	0	0
0	.707	9	0.3	11.8	10.6	1.12	0	0	0	0
0	.707	13	0.4	11.5	0.7	.75	1	1	0	0
0	.707	16	1.2	11.8	0.7	1.12	0	0	0	0
1	1.225	13	1.7	10.7	2.3	1.13	0	0	0	0
1	1.225	0	0.5	11.5	0.6	1.00	0	0	0	0

APPENDIX C
TABLE 14

INDIVIDUAL RAW SCORES BY TREATMENT COMBINATIONS
HIGH ACQUIESCENCE (A+) HIGH MAJORITY (M+)
INFLUENCE ABSENT (I-)

Raw Conformity	Transformed Conformity	Acquiescence	Postexperimental Questionnaire Items 2	3
HIGH AMBIGUITY (Am+)				
3	1.871	37	7.9	4.6
1	1.225	33	8.8	2.3
3	1.871	34	11.5	1.1
0	.707	25	6.8	5.7
2	1.581	27	5.7	4.4
3	1.871	29	11.4	0.9
2	1.581	26	3.6	7.7
0	.707	29	6.9	3.6
1	1.225	27	11.1	1.0
0	.707	30	5.5	4.9
3	1.871	25	8.5	5.0
LOW AMBIGUITY (Am-)				
0	.707	36	0.4	10.5
0	.707	32	0.2	11.8
0	.707	28	2.5	11.0
0	.707	33	2.0	7.5
0	.707	29	0.5	11.5
0	.707	26	0.7	9.2
0	.707	25	0.4	11.7
0	.707	47	1.3	11.5
0	.707	26	0.2	11.8
2	1.581	32	1.8	8.6
0	.707	27	3.8	10.0

APPENDIX C
TABLE 14

INDIVIDUAL RAW SCORES BY TREATMENT COMBINATIONS
HIGH ACQUIESCENCE (A+) LOW MAJORITY (M-)
INFLUENCE ABSENT (I-)

Raw Conformity	Transformed Conformity	Acquiescence	Postexperimental Questionnaire Items 2	3
HIGH AMBIGUITY (Am+)				
2	1.581	29	11.2	0.5
1	1.225	27	4.3	9.4
2	1.581	26	11.0	4.0
1	1.225	30	12.0	6.2
1	1.225	27	4.5	6.4
0	.707	26	8.0	3.2
4	2.121	31	4.3	9.6
2	1.581	27	5.7	8.9
4	2.121	36	10.4	1.7
2	1.581	29	11.6	0.5
2	1.581	29	8.6	6.5
LOW AMBIGUITY (Am-)				
0	.707	33	1.5	11.2
0	.707	30	0.4	11.2
0	.707	28	0.4	10.0
0	.707	31	0.5	11.5
0	.707	28	0.2	11.8
0	.707	25	0.3	11.8
0	.707	32	0.3	11.2
1	1.225	34	0.9	11.4
0	.707	26	0.3	11.2
0	.707	27	0.1	11.9
0	.707	34	0.4	10.8

APPENDIX C
TABLE 14

INDIVIDUAL RAW SCORES BY TREATMENT COMBINATIONS
LOW ACQUIESCENCE (A-) HIGH MAJORITY (M+)
INFLUENCE ABSENT (I-)

Raw Conformity	Transformed Conformity	Acquiescence	Postexperimental Questionnaire Items 2	3
HIGH AMBIGUITY (Am+)				
1	1.225	13	11.5	6.2
0	.707	2	11.4	1.1
0	.707	11	7.0	5.2
1	1.225	9	7.1	5.9
1	1.225	15	8.8	8.2
7	2.739	15	0.3	7.5
2	1.581	13	4.5	5.2
3	1.871	11	10.8	1.7
5	2.345	13	9.8	3.2
1	1.225	16	9.4	2.4
0	.707	13	7.5	6.5
LOW AMBIGUITY (Am-)				
0	.707	8	0.3	11.2
0	.707	8	1.0	10.5
0	.707	8	1.8	9.1
0	.707	13	2.3	10.3
0	.707	12	3.0	9.8
0	.707	9	1.5	9.4
0	.707	12	0.4	7.5
0	.707	16	1.9	11.4
0	.707	12	3.3	8.2
1	1.225	16	1.5	9.6
0	.707	12	3.5	8.4

APPENDIX C
TABLE 14

INDIVIDUAL RAW SCORES BY TREATMENT COMBINATIONS
LOW ACQUIESCENCE (A-) LOW MAJORITY (M-)
INFLUENCE ABSENT (I-)

Raw Conformity	Transformed Conformity	Acquiescence	Postexperimental Questionnaire Items 2	3
HIGH AMBIGUITY (Am+)				
0	.707	15	7.9	8.1
1	1.225	6	6.5	6.2
2	1.581	11	11.7	0.5
3	1.871	12	9.0	4.0
2	1.581	14	11.0	1.6
0	.707	11	10.2	4.8
3	1.871	7	6.0	5.8
1	1.225	11	6.6	7.5
0	.707	15	4.3	8.0
1	1.225	4	9.3	2.6
2	1.581	6	7.8	3.0
LOW AMBIGUITY (Am-)				
1	1.225	1	6.2	6.2
0	.707	13	3.4	8.3
0	.707	1	3.5	9.7
0	.707	11	0.9	11.1
0	.707	15	3.6	7.5
0	.707	8	5.7	5.2
0	.707	11	0.3	11.7
0	.707	16	1.0	10.3
0	.707	15	1.2	11.1
0	.707	10	0.5	11.7
0	.707	14	1.3	10.8

APPENDIX D

TABLE 15

MEANS AND STANDARD DEVIATIONS OF TRANSFORMED CONFORMITY SCORES FOR THE TREATMENT COMBINATIONS (N = 11 IN EACH TREATMENT COMBINATION)

Experimental (I+)

	A+				A-			
	M+		M-		M+		M-	
	Am+	Am-	Am+	Am-	Am+	Am-	Am+	Am-
$\bar{X}$	2.691	1.544	1.810	.881	2.535	1.066	1.523	.942
σ	.730	.755	.766	.297	.786	.427	.425	.258

Control (I-)

	A+				A-			
	M+		M-		M+		M-	
	Am+	Am-	Am+	Am-	Am+	Am-	Am+	Am-
$\bar{X}$	1.383	.787	1.503	.754	1.414	.754	1.298	.754
σ	.472	.251	.389	.149	.640	.149	.422	.149

APPENDIX D

TABLE 16

MEANS AND STANDARD DEVIATIONS OF DIFFICULTY RATINGS FOR THE TREATMENT COMBINATIONS (N = 11 IN EACH TREATMENT COMBINATION)

Experimental (I+)

	A+				A-			
	M+		M-		M+		M-	
	Am+	Am-	Am+	Am-	Am+	Am-	Am+	Am-
$\bar{X}$	9.200	3.173	7.318	2.118	6.473	1.273	8.082	1.418
σ	2.554	3.410	2.542	1.960	3.003	1.395	1.743	1.480

Control (I-)

	A+				A-			
	M+		M-		M+		M-	
	Am+	Am-	Am+	Am-	Am+	Am-	Am+	Am-
$\bar{X}$	7.973	1.254	8.327	.482	8.009	1.864	8.209	2.509
σ	2.484	1.106	2.986	.376	3.178	1.037	2.168	1.994

APPENDIX D

TABLE 17

MEANS AND STANDARD DEVIATIONS OF CONFIDENCE IN SELF RATINGS FOR THE TREATMENT COMBINATIONS (N = 11 IN EACH TREATMENT COMBINATION)

Experimental (I+)

	A+				A-			
	M+		M-		M+		M-	
	Am+	Am-	Am+	Am-	Am+	Am-	Am+	Am-
$\bar{X}$	6.773	9.982	6.746	9.400	8.191	10.891	4.627	10.736
σ	3.366	2.165	2.854	2.221	2.090	.931	2.359	1.379

Control (I-)

	A+				A-			
	M+		M-		M+		M-	
	Am+	Am-	Am+	Am-	Am+	Am-	Am+	Am-
$\bar{X}$	3.746	10.464	5.173	11.273	4.827	9.582	4.736	9.418
σ	2.095	1.401	3.257	.512	2.273	1.177	2.501	2.172

APPENDIX E

TABLE 18

SUMMARY OF ANALYSIS OF VARIANCE FOR RATINGS OF CONFIDENCE IN OTHERS

Source	df	MS	F
Acquiescence (A)	1	1.477	-
Majority size (M)	1	7.447	-
Ambiguity (Am)	1	21.011	2.123
A X M	1	.011	-
A X Am	1	.962	-
M X Am	1	1.182	-
A X M X Am	1	.029	-
Error: Within treatments	80	9.898	-
Total	87		

APPENDIX E

TABLE 19

SUMMARY OF ANALYSIS OF VARIANCE FOR ESTIMATES OF PERCEIVED DISAGREEMENT

Source	df	MS	F
Acquiescence (A)	1	.150	-
Majority size (M)	1	.047	-
Ambiguity (Am)	1	.024	-
A X M	1	.067	-
A X Am	1	.047	-
M X Am	1	.012	-
A X M X Am	1	.050	-
Error: Within treatments	80	.721	-
Total	87		

BIOGRAPHICAL SKETCH

Shirley Ann Nickols was born November 7, 1928, at Omaha, Nebraska. She attended public schools in Shenandoah, Iowa, and was graduated from Shenandoah High School in June, 1945. In June, 1947, she was graduated from Ward-Belmont Junior College in Nashville, Tennessee. In September, 1953, she entered Vanderbilt University in Nashville, Tennessee, and received the degree of Bachelor of Arts cum laude in March, 1957.

From September, 1961, until the present time she has been enrolled as a graduate student in the Department of Psychology at the University of Florida. She worked as a graduate assistant until June, 1963. She held a Graduate Fellowship until January, 1964, and was then employed as an Interim Instructor in the Department of Psychology.

She received the degree of Master of Arts in April, 1963. She is a member of Psi Chi, Sigma Xi, and the American Psychological Association.

This dissertation was prepared under the direction of the chairman of the candidate's supervisory committee and has been approved by all members of that committee. It was submitted to the Dean of the College of Arts and Sciences and to the Graduate Council, and was approved as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

August 8, 1964

E. Rollin Jones
Dean, College of Arts and Sciences

Dean, Graduate School

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